Mark Fisher

Software Engineer, Biologist, and Educator with a Ph.D. in Population Genetics aiming to contribute code to meaningful causes.

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Education

Ph.D **University of Georgia**, Genetics — Athens, GA — Aug 2007 – Aug 2013

B.S. **Yale University**, Ecology and Evolutionary Biology — New Haven, CT — Aug 2003 – May 2007

Experience

Symbiota, Full-time Software Engineer — Portland, OR — Feb 2023 – present — 3 years 5 months

Open-Source Biodiversity Data Management Software through the *University of Kansas*

- [PHP] Authored 331 Pull Requests, including PRs that improved UI/UX, database schema design, API development, DevOps infrastructure, and created new features requested by the end user community
- [Laravel] Authored 10 Pull Requests in the Laravel-based Symbiota-Laravel repository, which represents Symbiota's very recent effort to modernize the code base
- [Laravel] Authored or co-authored 22 Pull Requests in the Laravel-based SymbiotaServices repository, which respresents an internal product to assist with invoice generation and tracking (see below)
- Mentored 3 student developers on various projects, including code review and pair programming, most recently collaborating on and managing one student's creation of an internal service, Symbiota Services
- Established 508 compliance for Symbiota's user interface, among many other sub-projects
- Joined the management team in February, 2026 still in the capacity of a Software Engineer, and contributed to strategic planning, decision-making processes, and bug/feature prioritization

WildMe, Full-time Software Engineer — Portland, OR — June 2020 – Oct 2023 — 3 years 5 months

Full-stack development on the Wildbook platform, integrating computer vision models with web services to enable AI-powered wildlife research across multiple species and institutional deployments.

- [JSP and Java] Authored 122 Pull Requests in WildMe's flagship product, Wildbook, instances of which provide computer vision services to wildlife researchers on projects including sea turtles, leafy seadragons, humpback whales, whale sharks, and many more species
- [React and TypeScript] Authored 119 Pull Requests, significantly contributing to the front-end code base for Wildbook's (now-archived) spinoff product, Codex

WildMe, Contract Software Developer — Portland, OR — Dec 2018 – Feb 2019 — 3 months

- Established integration testing for WildMe's WildBook repository as well as for an existing deployment of WildBook called FlukeBook (flukebook.org)
- Documented the scope and detail of above testing through a series of YouTube tutorial videos
- [javaScript: Cypress] WildMeCypress: A suite of integration tests using the Cypress framework. Continuous Integration implemented on circleCI

WildMe, Intern (until 2017-08) / Contract Software Developer — Portland, OR
July 2017 – Feb 2018
8 months

- [Java] FlukeBot: A Twitterbot that attempts to identify humpback whale individuals from images of flukes
- Wrote a supplementary tutorial assisting with setup of instances of WildBook for future interns
- Gained familiarity with essential components of WildMe's code base within the four-week internship period, and contributed code to several of them

Bioinformatics Core, Oregon Health and Science University, Computational Biologist — Portland, OR
Nov 2015 – Jan 2017
1 year 3 months

- Worked effectively with a team to deliver reports and reproducible underlying code for clients for both the Bioinformatics Core and Integrated Genomics Laboratory, in the form of KnitR reports
- Developed and organized code-sharing practices and repositories for the Bioinformatics Core
- Improved data management, workflow, organization, and client delivery for the Integrated Genomics Laboratory, including creating a Java GUI for technicians in the lab
- [Java/NetBeans] IGLToolkit: A GUI for processing data generated by Affymetrix Expression Console as well as some meta-data, rendering them as a preliminary Array Performance Summary (APS) used by the Integrated Genomics Laboratory (IGL) for client reports

Discover Life, Research Associate — Monteverde, Puntarenas, Costa Rica
Aug 2013 – Jan 2014
6 months

- Studied questions related to species delimitation and phenological variation of moth species across North and Central America
- Conducted nightly photograph sampling and identification of local moth diversity and collection of 40 target species of interest, as well as discovery-based inquiry of a large dataset using R

Teaching Experience

Portland Community College, Adjunct Biology Instructor — Portland, OR
Apr 2017 – present

- Biology 200B — Principles of Ecology: Field Biology in Costa Rica (Lecture and Laboratory) [Summer 2022, Summer 2024, Summer 2026 (upcoming)]
- Environmental Studies 171 — Environmental Science: Biological Perspective in Costa Rica (Lecture and Laboratory) [Summer 2022, Summer 2024, Summer 2026 (upcoming)].
- Biology 213 — Principles of Biology (Lecture and Laboratory) [Spring 2019] | Syllabus
- Biology 212 — Principles of Biology (Lecture and Laboratory) [Winter 2018; Spring 2020 Online] | Syllabus.
- Biology 211 — Principles of Biology (Lecture and Laboratory) [Fall 2018; Winter 2020] | Syllabus
- Biology 112 — Cell Biology for Health Occupations (Lecture and Laboratory) [Summer 2018; Fall 2019] | Syllabus
- Biology 101 — Biology (Lecture and Laboratory) [Spring 2017; Fall 2017; Winter 2018; Spring 2018] | Syllabus

Clark College, Adjunct Biology Instructor — Vancouver, WA
Sept 2017 – June 2020

- Biology 101 — Environmental Biology (Lecture and Laboratory) [Fall 2017
- Spring 2020] | Syllabus
- Involved students in local environmental community service including Clark College's native plant nursery, a restoration site in the St. Cloud Day area and Steigerwald Lake National Wildlife Refuge
- Biology 160 — General Biology (Lecture and Laboratory) [Summer 2018] | Syllabus

Washington State University Vancouver, Adjunct Biology Instructor — Vancouver, WA — Jan 2014 – Jan 2016

- Biology 301 — Genetics [Fall 2014 (63 students); Fall 2015 (57 students)]
- Biology 438[M] — Animal Behavior, Writing Intensive [Fall 2014 (29 students); Fall 2015 (19 students)]
- Biology 438L — Animal Behavior Laboratory [Fall 2014–2015]; Led students through independent research projects with emphasis on science communication and frequent written feedback
- Entomology 103 — Discover Insects: Laboratory for Non-Science Majors [Maymester 2015 (7 students)]
- Biology 403 — Evolutionary Biology [Spring/Summer 2014; Spring/Summer 2015 (up to 71 students)]
- Biology 499 — Special Problems in Biology (Independent Research) [Fall 2014; Spring–Fall 2015 (2–3 students each)] | Mentored undergraduates on projects including CRISPR-Cas9 gene knockout in honey bees, a Washington State Beekeepers Association grant proposal, fish behavior tracking using EthoVision XT, and literature reviews on HIV/PrEP dynamics and invasive lionfish management

Projects

Antenna — Flat-bug insect detector integration [Python: Django] — Oct 2024 – present

Active volunteer contributor to Antenna, the open-source data management and analysis platform for InsectAI's automated insect monitoring system. Focused on backend data pipeline architecture and ML model integration.

- (Ongoing) Designing and implementing integration of the open-source Flat-bug's detection model into Antenna's data processing pipeline
- (Ongoing) Working directly with the Antenna team to understand system requirements, characterize scientific use cases, and providing my own use case in the field in Costa Rica
- Familiarized myself with large-scale data processing pipelines and preprocessing workflows by creating my own detector trained on photographic data at a study site I still regularly visit and capture from. Example Jupyter notebook
- Gained hands-on experience with ML inference workflows, image data processing at scale, and the challenges of integrating computer vision models into production systems

AnnotateVid.Io [TypeScript: Next.js/React] — Nov 2017 – present

Platform that allows users to crowd-annotate videos. Ongoing passion project. Live deployment | Introductory Video

- Presented at Digital Data conference and slated to present at Animal Behavior conference in July
- Actively used by a rattlesnake research group at California Polytechnic State University and by Portland Community College students
- Older/deprecated Angular version used several AWS services (including S3 and CloudFront), featured extensive integration testing using Cypress, and utilized CircleCI for CI/CD

DraggleSimulator [TypeScript: Angular] — Jan 2019 – July 2019

Open-source simulation webapp that allows students to simulate and explore difficult population genetics concepts.

- Published in a peer reviewed open-source software journal called JOSE (The Journal of Open Source Education) in November 2019
- Designed to address lack of affordable tools available that use best teaching practices
- Teaches students about genetic drift
- Current live deployment uses several AWS services (DynamoDB, Route53, S3, and CloudFront)

Publications

Flukebook: an open-source AI platform for cetacean photo identification 2022
Blount, D., Gero, S., Van Oast, J., et al.
10.1007/s42991-021-00221-3 (Mamm Biol 102, 1005–1023)

DraggleSimulator: An Open Source Web Application for Teaching Genetic Drift 2019
Fisher, M.A.
10.21105/jose.00070 (Journal of Open Source Education, 2(21), 70)

HeFPipe: An analytical pipeline for heterozygosity-fitness correlations 2014
Fisher, M.A.
10.1111/1755-0998.12160 (Molecular Ecology Resources)

The roles of genetic diversity and SinV-2 viral infection in fitness of the invasive fire ant Solenopsis invicta 2013
Doctoral Dissertation
Fisher, M.A.
getd.libs.uga.edu/pdfs/fisher_mark_a_201308_phd.pdf (University of Georgia)

Conference Presentations

7. November 2025 — Entomological Society of America, Portland, OR — Presentation: Fisher, M., Walker, L., Gilbert, E., Orellana, S., Pearson, K., Post, G., Salikov, N., Wilt, L., Yost, J., & Franz, N. Leveraging new Symbiota features to extend specimen data in existing biocollections.
6. May 2025 — Society for the Preservation of Natural History Collections Demo Camp, Lawrence, KS, Hybrid — Demo: Fisher, M., Pearson, K., Post, G., Salikov, N., Wilt, L., & Gilbert, E. Symbiota 3.2: more tools for managing and sharing extended specimen data.
5. May 2024 — Digital Data Conference, Lawrence, KS, - Presentation: Fisher, M. AnnotateVid.Io: A platform for crowd-annotation of behavioral videos.
4. February 2018 — Ocean Sciences Meeting, Portland, OR — Presentation: Fisher, M.A., Holmberg, J., Wainner, C., Van Oast, J., Berger-Wolf, T., Stewart, C., Wildbook: Finding High Quality Mark-Recapture Data for Whales and Sharks on Twitter and YouTube Using Multiple Forms of Machine Learning.
3. June 2013 — Evolution, Snowbird, UT — Presentation: Fisher, M.A., Ross, K., Shoemaker, D. Fitness costs of SINV-1 and SINV-2 viral infections on incipient queens and colonies of the invasive fire ant, Solenopsis invicta.
2. March 2012 — The University of Georgia Graduate Student Association 2012 Interdisciplinary Conference, Athens, GA — Poster: Fisher, M.A., D. Promislow. Applying WIP [Writing Intensive Program] principles to oral presentations.
1. September 2010 — Southeastern Population Ecology and Evolutionary Genetics (SEPEEG), Madison, FL — Presentation: Fisher, M.A., K. Ross. Heterozygosity-fitness associations in the invasive fire ant, Solenopsis invicta: early hints of cryptic inbreeding?

Skills

Backend & Infrastructure: Python (backend development, data processing), SQL (PostgreSQL, MariaDB), No-SQL databases (Firebase, MongoDB), API design, Database architecture and migration strategies

Frontend & Full-Stack: TypeScript (Next.js/React, Angular2+), Exposure to Python (Django, Flask) via Antenna and Codex project work, PHP (Laravel), JavaScript (Ember.js, jQuery), Java (JSP)

DevOps & Cloud: Exposure to cloud platforms (AWS, Azure, Jetstream), Job schedulers (HTCondor, Slurm), CI/CD pipeline design and implementation (CircleCI, GitHub workflows), End-to-end testing (Cypress, Playwright)

Data & Scientific Computing: R (KnitR, BioConductor), Bash/Shell scripting, Jupyter notebooks, Machine learning pipeline experience/exposure via volunteer work with Antenna, Large-scale data processing and validation

Public Speaking, Communication, and Mentorship: Experienced in delivering presentations at conferences, engaging with large classrooms of students, mentoring students, and effectively communicating complex scientific concepts to diverse audiences

Other Interests

- Black belt in Brazilian Jiu-Jitsu (21 years and counting)
- Homesteading (gardening, canning, orcharding, beekeeping, chicken keeping, etc.)
- Member of the Portland Timberfish (LGBT Masters Swimming Program)
- Languages (English [native], Spanish [conversational], German [intermediate], Italian [beginner])