Paul R. Glaum

Applied Mathematical Modeler & Env. Data Scientist

Ann Arbor, MI
prglaum [@] gmail dot com   website
Google Scholar   Research Gate   GitHub

Summary: PhD ecologist and evolutionary biologist. 10+ years producing novel and high impact research with data-driven results across multiple fields. Expertise in project design, project management, multiple programming environments, applied mathematics, statistical analysis, and interpreting complex scientific results for general audiences. Organized, motivated, & adaptable to evolving project objectives while working both independently and in teams.

Competencies

Core Skill Set	Model building & analysis; Experimental design; Data management, manipulation, analysis, & visualization; Scientific communication,
Types of Models	ODEs, PDEs, Networks, IBMs (agent based models), Discrete time models, Spatial genetic models, Stochastic models, Bayesian Networks, Toxicological models, etc.
Analysis	Numerical analysis, Network analysis, Machine learning (neural networks, random forests, etc.), Frequentist & Bayesian statistics, Bifurcation analysis, Large databases & data warehouses (data cleaning, curation, ETL, etc.), EDA.
Types of Data	Network, Time series, Spatiotemporal, Environmental, Socio-economic, GIS raster data, Species distributions, Allometric/Metabolic, Organismal traits, Allele frequencies, etc.
Programming	R, Matlab, Mathematica, Linux, Command line, JMP, SQL, Python, Java, C++, HTML
Computing	Cloud/cluster/HPC computing, pbs/slurm scripting, Globus, Git (Github), etc.

Professional Experience

Present **June 2022**	**Waterborne Environmental Inc. – Senior Scientist/Ecological Modeler** ● Client facing risk analyst covering chemical run-off, ecotoxicology, and mitigation. ● Co-lead stats & data team. Assisted federal grant writing process.
May 2022 **May 2020**	**U. of California – Davis, Environmental Science & Policy: Postdoctoral Scholar** ● Wrote computationally efficient method for integrating 100s of unique organismal phenologies into large network models using the replicator equation. ● Created novel tests and network statistics to corroborate model output with a large empirical, field, and museum dataset (curated by collaborators and myself). Article Link ● Developed novel extension of machine learning techniques into analysis of ODE simulation data while mentoring graduate student research. Article Link
May 2020 **May 2018**	**University of Michigan, Ecology & Evolutionary Biology/ Michigan Computational Discovery and Engineering: Postdoctoral Res. Fellow** ● Integrated economic and biological models with fishery yield data to develop first network based bio-economic model of fishery dynamics. Article Link ● Analyzed large simulation datasets using machine learning and regression techniques. ● Collaborative analysis of historical pollinator community database using museum specimen records and long-term weather data. Mentored undergraduate researcher.
May 2018 **Sept 2012**	**University of Michigan, Ecology & Evolutionary: Grad Student Researcher** ● Independently implemented longitudinal pollinator field research integrating land cover and socio-economic GIS data. Mentored and trained 10 undergraduate students. ● Contacted by multiple news outlets to discuss findings, e.g. NPR, PBS, Sierra Club, Detroit Metro Times, The Scientist Magazine, Next City ● Incorporated empirical data (e.g., plant chemistry, ontogeny) into ODE model formulation. Fit model components to field data.
Multiple Years	**Teaching Positions** ● GRAD. INSTRUCTOR: U of Mich ● ESL Teacher: Shimane Prefecture, Japan.

Education

PhD University of Michigan – Ecology & Evolutionary Biology
MSc. University of Michigan – Ecology & Evolutionary Biology
B.S. University of Wisconsin, Madison – Mathematics & Japanese

Additional: Conversational Japanese, Grant Writing ($200K awarded), Conference organizer, Public speaking (20+ presentations), Mentoring