

FRANCISCA JAVIERA RUDOLPH

Infectious disease ecologist | f.javierarudolph@gmail.com |
<https://www.linkedin.com/in/javirudolph/>

EDUCATION

Ph.D. in Zoology, University of Florida, Gainesville FL 2015-2022

Dissertation: *Ecological Consequences of Individual Variation in Animal Movement: A Modeling Approach*
Skills: statistics, stochastic processes simulation, computational modeling, bootstrapping, extreme value theory.

B.S. Biology, Universidad San Francisco de Quito, Ecuador 2009-2015

Thesis: *Ecology of Leptospirosis: Environmental risk factors for domestic animals in the state of Georgia*
Minor: Microbiology
Cum laude

Study abroad program, Odum School of Ecology, University of Georgia, Athens, GA 2013-2014

Infectious disease ecology apprenticeship. Programming skills, statistics, compartmental models.
Advisors: Andrew Park, PhD and Richard Hall, PhD
Presidential Scholar (GPA 4.0)

Additional Training

Decision Analysis Tools, NCTC. ALC3191	Jan 2023
Introduction to Structured Decision Making, NCTC. ALC3171	Jun 2022
NEON Accelerate Program, hypercomputing, reproducible research	Nov 2018
The Carpentries, Geospatial R	2018
Population and Community Parameter Estimation, USGS	Mar 2017
Clinic on Dynamical Approaches to Infectious Disease Data, DAIDD	Dec 2015
Tropical Ecology Summer Field Course, University of Manchester	July 2015

PROFESSIONAL APPOINTMENTS

Postdoctoral Research Scientist, University of Florida Jan 2024 – present

Spatial Epidemiology & Ecology Research Laboratory in the Geography department.
Infectious disease mathematical modeling with compartmental models for anthrax dynamics.
Machine learning approaches to forecast disease risk areas and global distribution of pathogens.
Geospatial analysis, timeseries modeling, boosted trees, random forest, classification.
Programming with R and Python.
Provided training for version control, developed Git and GitHub workflows for the lab.

Postdoctoral Scholar, Penn State University, University Park, PA April 2022 – Jan 2024

Department of Ecosystem Sciences and Management
In a joint role with USGS and the Disease Decision Analysis and Research (DDAR) Group, lead the decision process for bat conservation and management in Montana under the threat of White Nose Syndrome, a fungal pathogen affecting bat populations across the US.
Bayesian modeling using JAGS and Stan interfaced with R to forecast distribution of pathogen in the state using hierarchical models, specifically multi-state occupancy models.
Organized and facilitated multiple expert elicitation panels while managing a team of 10 collaborators in the decision process. Wrote custom functions to adapt to our needs and incorporate the effects of

management actions on predictions and scenario simulations depending on different management strategies.

Collaborator in SARS-Cov-2 outbreak dynamics in white-tailed deer project. Lead development of modeling framework using a modified SIR compartmental model to understand transmission dynamics between captive and wild deer.

Visiting Scientist and Postdoctoral Scholar

April 2022 – Jan 2024

U.S. Geological Survey Eastern Ecological Research Center (Patuxent Wildlife Research Center).

Received training as a decision scientist and on with Bayesian modeling approaches.

Presented highly technical models to a diverse group of stakeholders in state and federal agencies.

Provided decision-making support.

Graduate Research Assistant, University of Florida, Gainesville, FL

August 2015 – April 2022

During my graduate training I taught for 12 semesters, courses in biology, general ecology, statistics.

Lead the transition from excel to R in undergraduate courses of ecology with statistical modeling.

Developed R packages on two different semesters as a Research Assistant under two different PIs.

managed and organized code from previous research into R packages.

Research with large datasets and simulations, using high performance computing (HPC) at the University of Florida.

Training in statistical theory, machine learning, mathematical modeling of infectious diseases, stochastic processes.

PEER-REVIEWED PUBLICATIONS

Rudolph, F. J., Chaudhary, V., Grant, E.C.. Developing landscape-scale disease management under uncertainty, fragmented jurisdiction, competing objectives, and limited response options. *Submitted to Conservation Biology*

Rosenblatt E, Cook JD, DiRenzo GV, Grant EHC, Arce F, Pepin KM, **F. Javiere Rudolph**, et al. (2024) Epidemiological modeling of SARS-CoV-2 in white-tailed deer (*Odocoileus virginianus*) reveals conditions for introduction and widespread transmission. *PLoS Comput Biol* 20(7): e1012263. <https://doi.org/10.1371/journal.pcbi.1012263>

McEachran, M.C, Harvey, J.A., ... **Rudolph, F.J. [author 7/22]**, ... & Cook, J.D., 2024. Reframing wildlife disease management problems with decision analysis. *Conservation Biology*. <https://doi.org/10.1111/cobi.14284>

Leibold, M.A., **Rudolph, F.J.**, Blanchet, F.G., De Meester, L., Gravel, D., Hartig, F., Peres-Neto, P., Shoemaker, L. and Chase, J.M., 2022. The internal structure of metacommunities. *Oikos*. <https://doi.org/10.1111/oik.08618>

Snell, R.S., Beckman, N.G., Fricke, E., Loiselle, B.A., ... **Rudolph, J. [author 19/22]** ... & Schupp, E.W. 2019. Consequences of intraspecific variation in seed dispersal for plant demography, communities, evolution and global change. *AoB Plants*, 11(4), p.plz016. <https://doi.org/10.1093/aobpla/plz016>

Stafford, C.A., **Alarcon-Valenzuela, J.**, Patiño, J., Preziosi, R.F. and Sellers, W.I., 2016. Know your monkey: identifying primate conservation challenges in an indigenous Kichwa community using an ethnoprimateological approach. *Folia Primatologica*, 87(1), pp.31-47. <https://doi.org/10.1159/000444414>

Pizzitutti, F., Pan, W., Barbieri, A., Miranda, J.J., Feingold, B., Guedes, G.R., **Alarcon-Valenzuela, J.** and Mena, C.F., 2015. A validated agent-based model to study the spatial and temporal

heterogeneities of malaria incidence in the rainforest environment. *Malaria journal*, 14, pp.1-19.
<https://doi.org/10.1186/s12936-015-1030-7>

THESES

Rudolph, F.J., 2022. *Ecological Consequences of Individual Variation in Animal Movement: A Modeling Approach* (Doctoral dissertation, University of Florida). <https://javirudolph.github.io/aracari/> OR <https://www.proquest.com/openview/db9a6664c30ca5224f52910cc2ec8652/1?pq-origsite=gscholar&cbl=18750&diss=y>

Alarcón Valenzuela, F.J., 2015. *Ecology of leptospirosis Environmental risk factors for domestic animals in the state of Georgia, USA* (Bachelor's thesis, Quito: USFQ, 2015).
<https://repositorio.usfq.edu.ec/handle/23000/4130>