GUY FREDERICK SUTTON

I am a data scientist, an academic, an R and Julia software developer, and an Entomologist. As a data scientist, I build software tools, and develop courses and workshops to teach statistical methods for scientific research, and how to code in R and Julia. My teaching resources are communicated across multiple platforms, including post-graduate courses, professional workshops and my blog: Stats for Scared Ecologists. My scientific work focuses on understanding plant-insect interactions and how this knowledge can be used to manage natural ecosystems.

EDUCATION

2020 | 2017

Ph.D. in Entomology
Rhodes University — Makhanda, South Africa

PROFESSIONAL EXPERIENCE

Current | 2019

Quantitative Ecologist
Rhodes University — Durban, South Africa

- Project and team management
- Design, conduct, and analyse scientific experiments
- Organise and conduct remote field surveys
- Communicate results in reports, peer-reviewed papers, and talks
- Develop teaching materials and research software
- Teach technical classes to under-graduates, post-graduates and other researchers
- Successfully write grant proposals for funding
- Recruit, supervise, and lead a team of MSc and PhD candidates

SOFTWARE DEVELOPMENT

Current | 2019

R Package: *ThermalSampleR*

- *ThermalSampleR* is an R package I co-wrote and maintain that performs a range of simulations to aid sample size planning for experiments determining physiological limits (e.g. CT_{min}/CT_{max}) of biological organisms.

Current | 2019

R Package: *sapiaR*

- *sapiaR* is a developmental R package I wrote and maintain that automates the calculation of geospatial statistics and plotting of the characteristic South African Plant Invaders Atlas (SAPIA)-style distribution maps used in numerous publications on invasive plants in South Africa.

PERSONAL DETAILS

g.sutton@ru.ac.za
github.com/guysutton
Statistics Blog
+27 82 552 4643

PROGRAMMING

R / tidyverse
Julia
git / GitHub

DATA ANALYSIS

Linear models (inc. GLM, GLMM)
Non-linear models (e.g. GAM)
Data visualisation (e.g. ggplot2)
Multivariate analyses (e.g. MDS, PCA, multivariate GLM)
Simulation

LITERATE CODING

R markdown / markup
blogdown / bookdown / pagedown
xaringan
distill
Continuous integration (e.g. Github actions)
Package development (in R and Julia)
Functional programming

Current | 2020

Julia Package: *ModelCheck.jl*

• *ModelCheck.jl* is a developmental Julia package I wrote and maintain that allows users to perform model diagnostics on their fitted statistical models, by producing a range of residual diagnostics plots (e.g. quantile-quantile plots, fitted versus residuals plots).

TEACHING

Current | 2019

Introduction to R for biologists

• As co-instructor, I developed a series of lectures for this Honours-level course on linear modelling in R. These lectures introduce students to common statistical analyses used in the field of ecology, including: linear regression, ANOVA, ANCOVA and more complex linear models (e.g. binomial GLM, poisson GLM), and demonstrate how to code these analyses in R, including: model diagnostics and evaluation, inference and producing publication-quality written summaries and visualisations.

Current | 2019

R workshops

• I have developed a number of weekly 1 - 1.5 hour and multi-day statistics workshops, primarily using the R statistical software, to graduate students, faculty and industry partners. These workshops are driven by the needs of the attendees, covering topics including: data management/curation, data cleaning, linear modelling, multivariate analyses, data visualisation and spatial analyses (e.g. mapping).

SELECTED PEER-REVIEWED PAPERS

2022

SPEDE-sampler: an R Shiny application to assess how methodological choices and taxon-sampling can affect Generalised Mixed Yule Coalescent (GMYC) output and interpretation

Molecular Ecology Resources

2021

Field-based ecological studies to assess prospective biological control agents for invasive alien plants: An example from giant rat's tail grass

Journal of Applied Ecology

12 scientific papers, ~66 citations, h-index: 6

More details about my scientific research

REFERENCES

Professor Iain Paterson
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