

**Job Title:**

Ecologist or data scientist to analyse a tropical rainforest ecosystem

**Salary:**

MYR 5,000 – 7,500 per month, depending on qualifications and experience

**Location:**

South East Asia Rainforest Research Partnership

Kota Kinabalu, Malaysia

**Job Summary:**

We are building a team to create a virtual rainforest (<https://virtual-rainforest.readthedocs.io>): a general ecosystem model replicating all physical and biotic components of the ecosystem and their interactions. We have up to four vacancies open for ecologists and/or data scientists to contribute their skills, knowledge and expertise to collate and analyse field data that describes the dynamics and structure of a tropical rainforest ecosystem. We welcome applications from people at all levels from university graduates, to postdocs, early career lecturers and professionals in private industry.

Ecosystems cannot be understood through piecemeal studies of their individual components. The discipline of tropical forest ecology has at its disposal ever-accumulating datasets examining all aspects of rainforest ecosystems giving insight into everything from the population dynamics of plants through to the scavenging behaviour of ants. This knowledge allows us to understand much of how the ecosystem operates and the ecosystem services it generates, but in a disjointed fashion. As an ecologists or data scientist in rainforest ecology, you will be part of an attempt to tie that knowledge into a single, comprehensive understanding of how the ecosystem operates in its entirety.

**Duties and responsibilities:**

The primary role of successful applicants will be to collate and analyse data describing one or more of the four modules of the virtual rainforest: plant, animal, soil microbial or physical processes. The virtual rainforest leans heavily on data collected from the SAFE Project ([www.safeproject.net](http://www.safeproject.net)), which is located in Sabah, Malaysia. You will be required to help with the management and analysis of these datasets, with an emphasis on preparing data for calibrating and/or validating predictions from the virtual rainforest. Analyses will be varied and, where appropriate, will be tailored to your expertise and your interests. Potential topics include, but are not limited to: the valuation of ecosystem services, network analyses of species interactions, time series analyses of microclimate, hydrology or population dynamics, mapping of ecosystem features across space, estimating the structure of trophic pyramids and energy flows, and automating the processing of data from networks of ecoacoustic, camera trap, hydrology and climate sensors. If significant data gaps are identified, there will be opportunities for you to conduct fieldwork to collect new data.

You will be assisted in your role by additional team members, including your peers and a team of computational ecologists working at Imperial College London. We will provide hands-on support, training and skill development to help you meet the needs of the position where this is necessary. The project also provides a generous budget for placements and secondments to give you the freedom to work with, and harness the expertise of, research groups beyond our own. All team members will be expected to help develop the skills and competencies of their peers through the sharing of tasks and knowledge. As part of a research group and environment that extends beyond the virtual rainforest team, you will be asked to contribute to the supervision of undergraduate and postgraduate student projects. You will also be given time, resources and encouragement to pursue your professional development.

**Essential requirements:**

We require team members who provide complementary technical skills and disciplinary knowledge, so applicants from any ecological background *or* with any relevant skillset are encouraged to apply. **No individual team member is expected to have more than a small subset of the list of topics and skills, and we specifically encourage applicants to clearly identify the subset of skills that they could bring to the team.** Much of the day-to-day work will be using the R or Python programming languages, so some experience with these would be an advantage. Experience either analysing or managing ecological data is desirable, as is

experience interpreting ecological data and analyses. We are also particularly interested in applicants from a data science background with experience in any one or more of machine learning, spatial statistics, time series analysis, Bayesian statistics, mixed effect models, and path or structural equation modelling.

**Further Information:**

This project is being jointly run by Imperial College London (UK) and the South East Asia Rainforest Research Partnership (Malaysia). We anticipate bringing the whole team together, in person, at least one time per year, with regular online meetings held on a weekly and monthly basis.

These positions are funded for two years in the first instance. We encourage applications from candidates that would like full-time or part-time positions on this project, and will explore job-sharing arrangements should that be appropriate.

Applicants will need to submit a CV and cover letter by email to [r.ewers@imperial.ac.uk](mailto:r.ewers@imperial.ac.uk). There is no deadline, and applications will be continuously reviewed until all positions have been filled. Cover letters should make clear which aspects of rainforest ecology you would be most comfortable contributing to, and/or what subset of the skills required for the whole team that you would bring.

Should you require any further details on the role please contact: Prof. Rob Ewers – [r.ewers@imperial.ac.uk](mailto:r.ewers@imperial.ac.uk). Informal enquiries are welcomed.

## Person Specification

Requirements	Essential (E)/ Desirable (D)
Candidates/post holders will be expected to demonstrate the following:  <b>No individual is expected to have more than a small number of these desirable skills, knowledge and experiences, and we specifically encourage applicants to clearly identify the subset of skills that they could bring to the team.</b>	
<b>Education</b>	
A Bachelors, Masters or PhD degree in the field of ecology, maths, physics, statistics, data science, computing or another topic relevant to ecology or the environmental sciences	D
<b>Knowledge</b>	
Forest ecology: Knowledge of one or more of:	
Plant ecology	D
Plant physiology	D
Animal ecology	D
Below-ground ecology	D
Community ecology	D
Food web ecology	D
Metabolic ecology	D
Functional ecology	D
Ecological stoichiometry	D
Biogeochemistry	D
Forest hydrology	D
Forest microclimate	D
Ecosystem services and/or their valuation	D
<b>Skills &amp; Abilities</b>	
Ability to publish research	D
Ecological fieldwork and data collection on one or more of:	
Plants	D
Animals	D

Microbial communities	D
Microclimate	D
Hydrology	D
Carbon	D
Data science: Experience in one or more of:	
Ecological statistics	D
Data management	D
Spatial statistics	D
Time series analysis	D
Path analysis and/or Structural equation modelling	D
Machine learning	D
Bayesian statistics	D
Mixed effect models	D
Statistical downscaling	D
Bioinformatics	D
Programming: Experience in one or more of:	
Programming - preferably in R or Python	D
Github	D
Jupyter notebooks	D
Geographic Information Systems (GIS)	D
R and/or Python package development	D
Full-stack web frameworks	D
SQL databases	D