

JOHN L. GODLEE

EMAIL: john.godlee@ed.ac.uk PHONE: +44 7397 978 688 WEB: blogs.ed.ac.uk/johngodlee/

CURRENT EMPLOYMENT

Nov 2021 - Present

POST-DOCTORAL RESEARCHER | UNIVERSITY OF EDINBURGH | SCHOOL OF GEOSCIENCES
[SECO](#) - BIOGEOGRAPHY AND CARBON DYNAMICS OF THE DRY TROPICS

I lead analyses of woody carbon dynamics using plot-based tree demographic data in tropical savannas and dry forests. My research spans functional ecology and earth system modelling, with the aim of attributing ecological/evolutionary mechanisms to observed continental scale variation in carbon dynamics. Through this work, I have come to manage tree inventory data from a global multi-network group of collaborators. I have a deep understanding of forest biomass estimation techniques, from field data collection to data archiving, data management, applying and evaluating a range of biomass allometries, and using these data to address fundamental questions about ecosystem behaviour and its determinants.

CAREER HIGHLIGHTS

- Manager of field activities at two research sites, in Angola and Namibia, in collaboration with local institutions. In addition to facilitating multiple research projects with impactful publications, these sites are used increasingly for field-based teaching both by students both from the UK and in-country institutions.
- I lead development of the [SEOSAW](#) (Socio-Ecological Observatory for Studying African Woodlands) plot database, with over 100 international partners, 290 permanent monitoring plots, with 11 publications to date.
- Fellow of the Higher Education Academy, with extensive experience leading university field course groups, delivering workshops on research design, developing new courses on ecological theory, and supervising students from undergraduate to PhD level.
- Founding member and core developer of [Coding Club](#), a peer-learning initiative to improve understanding of statistics and computer programming in ecology and environmental sciences.
- I lead an experimental reforestation and silvo-pastoral scheme in North Yorkshire, with involvement currently from three land stakeholders in the region and in collaboration with the Woodland Trust.

EDUCATION

Sep 2017 - Aug 2021

PHD: ECOLOGICAL SCIENCES | UNIVERSITY OF EDINBURGH | SCHOOL OF GEOSCIENCES

Thesis: Biodiversity-Ecosystem Function Relationships in Southern African Woodlands

I explored interactions between tree species diversity, woodland structure, and environmental processes across southern Africa. I published the first thorough assessment of the relationship between tree species diversity and woody biomass in savanna vegetation. I used a combination of existing data from inventory plots (SEOSAW), terrestrial LiDAR, and remote sensing data to develop theory on leaf phenology in semi-arid woodlands, particularly the phenomenon of pre-rain green-up. I developed an ongoing programme of vegetation monitoring in southwest Angola.

Sep 2012 - Jun 2016

BSC HONS (FIRST): ECOLOGICAL AND ENVIRONMENTAL SCIENCES | UNIVERSITY OF EDINBURGH | SCHOOL OF GEOSCIENCES

Dissertation: Forest structure and trait acclimation along an Amazon-Andes elevation gradient

I used theories of plant ecophysiological stress response to investigate elevational range restriction of tree species, with a focus on how existing forest structure affects seedling establishment at range extremes.

Sep 2009 - Jul 2011

A-LEVELS | QUEEN ELIZABETH SIXTH FORM COLLEGE, COUNTY DURHAM

Geology (A*), Geography (A), Biology (A)

PUBLICATIONS

Hua X., ... **Godlee J. L.**, 2024. Site-specific nutrient data reveal the importance of soils in driving the mycorrhizal make-up of woody vegetation worldwide. *Global Ecology and Biogeography*. DOI: [10.1111/geb.13936](https://doi.org/10.1111/geb.13936)

Godlee J. L., Ryan C. M., Siampale A., Dexter K. G. 2024. Tree species diversity drives the land surface phenology of seasonally dry tropical woodlands. *Journal of Ecology*. DOI: [10.1111/1365-2745.14366](https://doi.org/10.1111/1365-2745.14366)

Davies R. W., ... **Godlee J. L.**, 2023. Precipitation gradients drive high tree species turnover in the woodlands of eastern and southern Africa. *Ecography*. DOI: [10.1111/ecog.06720](https://doi.org/10.1111/ecog.06720)

Rees M., ... **Godlee J. L.**, 2023. Testing White's floristic impoverishment hypothesis in the forest-savanna transition zones of Africa. *Diversity*. DOI: [10.3390/d15070833](https://doi.org/10.3390/d15070833)

Jucker T., **Godlee J. L.**, +117 authors. 2022. Tallo: A global tree allometry and crown architecture database. *Global Change Biology*. DOI: [10.1111/gcb.16302](https://doi.org/10.1111/gcb.16302)

Tchamba J., **Godlee J. L.**, Chisingui A. V., Luís J. C., Rafael M. F., Gonçalves F. M.. 2022. Tree species diversity and composition of the woodlands in the municipality of Chipindo, Huíla, Angola.. *African Journal of Ecology*.

Godlee, J. L. 2021. Terrestrial LiDAR of southern African woodland vegetation, Bicuar National Park (Angola), Mtarure Forest Reserve (Tanzania), 2019-2020 [dataset]. *University of Edinburgh, School of GeoSciences*. DOI: [10.7488/ds/3114](https://doi.org/10.7488/ds/3114)

Godlee J. L., Casey M. Ryan, Kyle G. Dexter, +22 authors. 2021. Structural diversity and tree density drives variation in the biodiversity-ecosystem function relationship of woodlands and savannas. *New Phytologist*. DOI: [10.1111/nph.17639](https://doi.org/10.1111/nph.17639)

Godlee J. L., Gonçalves, F. M., Tchamba J., Chisingui A. V., Muledi J. I., Shutcha M. N., Ryan C. M., Brade T. K., Dexter K. G.. 2020. Diversity and structure of an arid woodland in southwest Angola, with comparison to the wider miombo ecoregion. *Diversity*. DOI: [10.3390/d12040140](https://doi.org/10.3390/d12040140)

SEOSAW partnership, incl. **Godlee J. L.**. 2020. A network to understand the changing socio-ecology of the southern African woodlands (SEOSAW): Challenges, benefits, and methods. *Plants People Planet*. DOI: [10.1002/ppp3.10168](https://doi.org/10.1002/ppp3.10168)

Panzou G. J. L. ... **Godlee J. L.** 2020. Pantropical variability in tree crown allometry. *Global Ecology and Biogeography*. DOI: [10.1111/geb.13231](https://doi.org/10.1111/geb.13231)

Daskalova G., Myers-Smith I., **Godlee J. L.**. 2020. Rare and common vertebrates span a wide spectrum of population trends. *Nature Communications*. DOI: [10.1038/s41467-020-17779-0](https://doi.org/10.1038/s41467-020-17779-0)

Rowland L., da Costa, A. C. L., Oliveira A. A. R., Oliveira R. S., Bittencourt P. L., Costa P. B., Gilles A. L., Sosa A. I., Coughlin I., **Godlee J. L.**, Vasconcelos S. S., Junior J. A. S., Ferreira L. V., Mencuccini M., Meir P.. 2018. Drought stress and tree size determine stem CO₂ efflux in a tropical forest. *New Phytologist*. DOI: [10.1111/nph.15024](https://doi.org/10.1111/nph.15024)

AWARDS

Mar 2019 | Edinburgh Teaching award

Completed a programme to improve teaching skills in higher education. Worked with a mentor over the course of an academic year to produce a series of reflective essays, drawing on pedagogical practitioner literature and personal teaching experiences. As part of the award I was inducted as a Fellow of the Higher Education Academy.

Jun 2017 | SEEECC Conference - Best Long Presentation

Best 15 minute talk at the Scottish Ecology, Environment and Conservation Conference, hosted by the University of Aberdeen. The talk presented research on forest structure and climate induced range shifts in the Peruvian Andes.

Apr 2017 | STEB Conference - Best Presentation

Best 15 minute talk at the Scottish Tropical Ecology and Biology Student Meeting, hosted by the University of Stirling. The talk presented research on tree seedling competition interactions and climate induced range shifts in the Peruvian Andes.

2015 | Edinburgh Award

Professional development course at the University of Edinburgh aimed at improving graduate skills. Attended seminars and wrote reflective essays on: public speaking, academic writing and project leadership. Kept self-evaluative blog over the course of an academic year.

RESEARCH AND OUTREACH GRANTS

Aug 2022 | African Forest Forum: Strengthening the understanding of the dynamics of the African forest vegetation under changing climate through permanent sampling plots | \$20,000

Policy brief and technical report provided to the African Forest Forum on the impacts of climate change on miombo savanna woodland carbon dynamics.

Aug 2022 | UKRI ODA Impact and Development Grant | £34,666

Ongoing project with PI Dr. Kyle Dexter to develop methodologies and build capacity for long term monitoring of savanna and dry forest vegetation in Angola and Namibia, with a focus on cross-border collaboration and sustainable management of protected areas. I lead-authored the proposal and lead the project.

December 2020 | Woodland Trust Woodland Carbon and Northern Forest Grants | £9950

Sustainable agriculture and rural land management scheme through experimental silvo-pastoral grazing and reforestation on marginal agricultural land, in collaboration with three local land stakeholders in North Yorkshire.

Feb 2019 | Davis Expedition Fund | £4000

Terrestrial LiDAR assessment of canopy structure and ecosystem processes in southern Tanzania.

Jan 2019 | National Geographic Beginning Investigators Grant | \$10,000

Joint PI with Dr. Francisco Maiato Gonçalves. How resilient are the carbon stocks and biodiversity of miombo woodlands to degradation and fuelwood harvesting?

Jun 2018 | NERC bursary | £980

Funding to attend Applied Plant Taxonomy and Field Survey Skills course at Kew Gardens.

May 2018 | Principals Go Abroad Fund | £350

Funding to attend SEOSAW Network Meeting in Mozambique.

Feb 2018 | School of GeoSciences Facilities Committee - Research Equipment Grant | £810

Funding to purchase camera equipment for hemispherical tree canopy photography for the School of GeoSciences.

Nov 2017 | James Rennie Bequest | £170

Funding to run Coding Club workshop at the British Ecological Society Annual Meeting.

Nov 2017 | Centenary Agroforestry 89 Fund | £984

Establishment of permanent woodland monitoring plots in Bicular National Park, Angola.

Nov 2017 | British Ecological Society - Small Grant | £1500

Funding to run Scottish Tropical Ecology and Biology Student Meeting.

Nov 2017 | Institute for Academic Development - Action Fund Small Grant | £470

Funding to run Scottish Tropical Ecology and Biology Student Meeting.

Mar 2016 | Royal Society of Biology - Travel Grant | £500

Funding to join expedition for Canadian Arctic herbivory study.

Dec 2015 | Friends of Roslin Glen - Outreach Fund | £900

Funding to design an interpretation panel about Roslin Glen's industrial history.

Nov 2015 | Lothian Conservation Volunteers - Outreach Fund | £500

Funding to install an interpretation panel about Roslin Glen's industrial history.

May 2015 | Principal's Go Abroad Fund | £350

Research expedition for Peruvian Andes seedling acclimation study.

Apr 2015 | British Travel Association Fund | £1000

Research expedition for Peruvian Andes seedling acclimation study.

PREVIOUS RESEARCH AND EMPLOYMENT EXPERIENCE

Aug 2020 - Present | Project member and Steering Committee member | University of Edinburgh

I developed the SEOSAW plot database and produced an R package for cleaning and analysing SEOSAW data. I wrote documentation and created a robust data management system for the SEOSAW database. I created educational research-focussed tools to facilitate collection and management of plot data such as advanced ODK XForms for digital data collection, data sheets, a field manual and a data analysis manual. I facilitated fieldwork by in-country partners in Angola (ISCED Huíla), Democratic Republic of Congo (University of Lubumbashi) and Zimbabwe (Zimbabwe Forestry Commission), with the aim of expanding SEOSAW's permanent plot coverage to under-represented bioclimatic regions. I provided support for other researchers using the SEOSAW dataset to create floristic maps and estimate carbon dynamics.

Jan - Apr 2019 | Professional Internship Programme | National Geographic and ISCED Huíla

I led a project with funding from Nat Geo to estimate the carbon stocks and biodiversity value of Bicuar National Park, in southern Angola, with colleagues from ISCED Huíla. I established long term vegetation monitoring infrastructure in the Park, and conducted a survey of land degradation impacts around the edge of the Park, to produce management recommendations to the Angolan Ministério do Ambiente for sustainable land use management within and around the Park.

May - Jun 2017 | Fieldwork coordinator under Dr. Edward Mitchard | University of Edinburgh

I managed the fieldwork of a long term experiment in collaboration with the US Forest Service, the Wildlife Conservation Society and Paula Nieto-Quintano, a PhD student at the University of Edinburgh. Fieldwork conducted in remote and logistically challenging Beteke Plateau of the Republic of Congo. I supervised students from Marien Ngouabi University, Brazzaville, and maintenance workers responsible for creating firebreaks. Fieldwork involved a tree growth and mortality census, with herbaceous biomass measurements in four 25 ha plots, followed by controlled burning of the plots (Nieto-Quintano et al. 2018)

Jan 2017 - May 2019 | Copy writer | Agricolgy, sustainable farming magazine

I wrote summaries of online resources on the [Agricolgy website](#). Articles had a focus on soil enrichment and enhancing pollinator services on British farms. Experience writing for an informed non-academic audience.

Sep - Dec 2016 | Research assistant under Dr. Lucy Rowland | University of Exeter

Six weeks fieldwork at the [Caxiuanã Esecafloor](#) drought experiment followed by work at the University of Exeter. Extensive experience with the Li-COR 6400XT Portable Photosynthesis System, collection and analysis of leaf traits. Lab work in Exeter included use of CAN-EYE Leaf Area Index analysis software and developing a method for the analysis of foliar fungal infections from scanned leaf images. I worked with a 10 year time series of leaf traits to analyse the effects of experimentally induced drought on tree growth and photosynthetic capacity.

Mar - Aug 2016 | Field assistant under Dr. Isla Myers-Smith | University of Edinburgh

Two months fieldwork at Kluane Lake Research Station and Qikiqtaruk (Herschel Island) in the Yukon Territory, Canada. I conducted an experiment investigating elevation-dependent patterns of seed herbivory, the data from which form part of a larger latitudinal study (Hargreaves et al. 2019). Other work included the collection of plant traits, monitoring of vegetation cover, and investigating soil decomposition rates with the [International Tea Bag Index](#).

Sep 2015 - Apr 2016 | Interpretation resources designer | Midlothian Ranger Service

I designed an [interpretation panel](#) that was installed at Roslin Glen, a Midlothian Country Park. The panel demonstrates historical land use of the Glen and the resulting landscape features. I designed factsheets for use in secondary schools and a QR code enabled walking route through the Glen.

Jul - Sep 2015 | Field assistant under Dr. Pippa Stone | University of Edinburgh

Part of a five person field team for two months on an elevational plot transect in Manú National Park, Peru. I conducted physiological and morphological measurements of seedling and adult trees, as well as competition measurements among tree seedlings for which I designed and executed the methodology. Experience using a MINIPAM-II portable chlorophyll fluorescence meter and analysing ecophysiological data.

May - Dec 2015 | Research assistant under Dr. Stephen Cavers | Centre for Ecology & Hydrology
Research assistant and data analyst for a common garden experiment investigating differentiation in Scots pine seed stock in terms of growth, phenology and environmental resistance. I conducted a study investigating the resistance of seedlings to pine weevils, an economically important pest of Scots pine.

TEACHING AND SUPERVISION

Sep 2023 - Present | Co-supervisor of PhD Student: Alice Jones | University of Edinburgh

Alice's project investigates the ecological strategies of trees in African woodlands and their implications for ecosystem dynamics. I provide intellectual guidance on ecological theory behind tree demographic rates in disturbance-prone savanna ecosystems.

Sep-Dec 2022 | Co-developer and lecturer for undergraduate course: Modelling Ecosystem Processes | University of Edinburgh

Alongside colleagues Dr. Stace Fairhurst and Dr. Luke Smallman I developed a new course aimed at final year undergraduates in ecological sciences, focussed on providing an introduction to numeric modelling and simulation of ecosystem processes. As well as consulting on overall course development, I delivered combined lecture-practical sessions on the subject of time series analysis and modelling demographic processes in forest ecosystems.

Jan-May 2022 | Co-supervisor of undergraduate dissertation student: Stephanie Koolen | University of Edinburgh

I provided intellectual mentorship and expertise on data analysis. I also provided guidance as a co-author on a manuscript bound for publication following from the dissertation.

Jan 2022 - Present | Co-supervisor of PhD Student: Hermene Diesse | Namibia University of Science and Technology

Hermene's project investigates variation in the structure of miombo woodlands across rainfall and disturbance gradients in southern Africa. I provide expertise in analysis of data from vegetation monitoring plots, terrestrial LiDAR, and woodland community ecology.

Nov 2021 - Present | Co-supervisor of PhD Student: Mathew Rees | University of Edinburgh

Mat's project investigates savanna forest transitions, primarily from an evolutionary perspective, in the northern miombo woodlands of Angola and the DRC. I provide mentorship on conducting fieldwork in southern Africa, particularly Angola, and in using large datasets of field data to answer questions on community assembly.

August 2019 - May 2020 | Co-supervisor of Masters student: Abel Cahali | ISCED Huíla

I guided Abel in research design for a study of land degradation and tree mortality in Bicular National Park.

Sep 2018, 2019 | Field demonstrator - Ecological Sciences Field Course | University of Edinburgh

I taught 4th year undergraduate students on a week long field course near Oban, Scotland. I designed a student research project brief and mentored 5 students in their experimental design, data collection and analysis. I ran clinics on the operation of hemispherical photography equipment for measuring tree canopy structure.

Sep-Dec 2017, 2018 | Demonstrator - Principles of Ecology | University of Edinburgh

I led two groups of 2nd year ecology undergraduates through the research design process, data collection and analysis of a plant fungal pathology project looking at tar-spots on sycamore. I also tutored students in basic statistics and translated older Minitab statistics practicals into modern R.

Oct 2016 - Jan 2019 | Co-founder, tutorial designer, tutor | Coding Club - programming proficiency initiative - University of Edinburgh

Founding member of [Coding Club](#), a peer-to-peer learning environment to overcome statistics anxiety and provide training in programming for the life sciences. I created online tutorials and delivered workshops to classes of up to 30 students/staff. Expertise in teaching includes Shiny web-apps, hierarchical modelling, reproducible research using R Markdown. Co-organised and delivered two Coding Club workshops at international conferences: the SEECC conference in Aberdeen and the British Ecology Society Annual Meeting.

SERVICE AND ADMINISTRATION

2021 - Present | Regular reviewer for high impact ecological journals including: New Phytologist, Methods in Ecology and Evolution, Journal of Ecology, Plants People and Planet, Global Ecology and Biogeography, Global Change Biology.

2019 - Present | SEOSAW (Socio-ecological observatory for studying african woodlands) - Steering committee member

I developed the SEOSAW inventory plot database and represent this part of the network on the steering committee. I work closely with international collaborators to develop research using the SEOSAW network, source funding opportunities for the network, and provide assistance during field data collection.

Jan 2022 | Invited talk at the University of Potsdam

I delivered a departmental seminar on current developments in carbon flux modelling in seasonally dry tropical woodlands, and work planned by the SECO project in this field.

Dec 2022 | Poster at the British Ecological Society Annual Conference

I presented a poster on the use of phyto-demographic data from repeat inventory plots to explain spatial variation in woody biomass dynamics across the seasonally dry tropics, with commendation from the President of the BES, Professor Yadvinder Malhi.

Aug 2022 - Present | Working group member: Alliance for Tropical Forest Science (ATFS) Mortality Working Group

Collaborative research to develop multi-network collaboration and pursue priority science questions related to global patterns of tree mortality.

Aug 2022 | External examiner, Masters thesis - Namibia University of Science and Technology

I examined a thesis on vegetation type classification and bioclimatic niche forecasting across Namibia.

Mar 2018 | Organiser of the Scottish Tropical Ecology and Biology Student Meeting

I led organisation of this conference hosted by the Royal Botanic Gardens Edinburgh and the University of Edinburgh. Attended by 50 people, 17 speakers and a midday skills workshop on creating academic posters. Secured funding from the British Ecological Society, University of Edinburgh Institute for Academic Development and the Royal Botanic Gardens Edinburgh.

Sep 2013 - Jul 2016 | Ecological and Environmental Sciences Student Representative

Year wide degree programme representative. Liaison for student issues on course content, deadlines, and pastoral care.

Sep 2015 - Jul 2016 | School of GeoSciences Convenor

Elected student association position at Edinburgh University Student's Association, representing the School of GeoSciences at Student Council and various committees including the architectural board for the construction of a new GeoSciences faculty building. Skills developed in project planning, effective representation, creative problem solving, committee chairing.

Sep 2013 - Jul 2016 | Project Co-ordinator, Edinburgh University Conservation Volunteers

Liaison with park rangers to direct weekly group excursions for between 10 and 40 students, focussed on practical conservation. Developed skills in logistics and team supervision. More practical skills in forestry, wooden construction and tool maintenance.

QUANTITATIVE, PROGRAMMING AND TECHNICAL SKILLS

R

Structural Equation Modelling with 'lavaan' and 'piecewiseSEM'. Bayesian modelling with 'rstanarm' and 'MCMCglmm'. Generalised linear mixed effects models with 'lme4'/'nlme'. Manipulation of large datasets, including SEOSAW, ForestPlots.net, TRY, Living Planet Index and GBIF. Spatial analyses of large datasets using 'sf' and 'terra'. Authoring of R packages to calculate tree-tree competition indices ('compInd'), and analysis of phyto-demographic data ('seosawr'). Advanced data visualisation with 'ggplot2'. 'R Markdown' and 'Sweave' for reproducible reports. 'Shiny' HTML5 web-apps for science communication.

Julia

Ecological network analysis using the 'SpatialEcology.jl' package. Calculation of diversity metrics from large databases. Analysing huge point clouds (10^8 points) with code adapted from C++.

Terrestrial LiDAR

Registration of point clouds using Leica Cyclone and CloudCompare. Extensive use of PDAL and C++ code for point cloud processing. Use of R and Julia to extract statistical parameters from point clouds. Basic knowledge of 'treeseg' for isolation of individual trees from point clouds.

Google Earth Engine

Extraction and summarising of gridded climate datasets for plot locations. Deriving land surface phenology metrics from multi-band MODIS data.

QGIS

Extensive experience creating maps for publication, using GDAL both within QGIS and on the command line to manipulate large spatial datasets.

ImageJ

Advanced knowledge of the ImageJ macro language for leaf area analysis and processing hemispherical tree canopy photographs. I designed a routine to identify fungal growths on leaves from droughted trees in the Brazilian Amazon. I wrote a [manual on hemispherical tree canopy photography](#) which covers use of ImageJ to analyse images.

Python

Processing spatial data with the Google Earth Engine Python API. Collection and processing of climate data using the ECMWF Python API. Knowledge of 'numpy' and 'matplotlib' for simple data visualisation and data wrangling.

L^AT_EX

Construction of long documents with tabular and graphical elements for myself and others. Integration of citation management software, custom BIB_TE_X stylesheets and templating with custom .sty. Creation of custom Beamer presentation templates.

Git

Experience managing collaborative research, websites and teaching resources. Branch management with multiple collaborators, pull requests, troubleshooting with ‘git diff’. I currently maintain the SEOSAW Bitbucket repository which holds resources and data for the SEOSAW project and involves a number of collaborators. In 2018 I ran [two workshops](#) at the University of Edinburgh on using Git on the command line.

Web development

I created the [Coding Club](#), [SEOSAW](#) and my [personal website](#) using Jekyll, Hugo, Markdown, HTML, CSS, and Javascript.

LANGUAGES

Portuguese: Basic-intermediate reading and writing, basic speaking.

Spanish: Basic reading, writing and speaking.

PROFESSIONAL ASSOCIATIONS

Higher Education Academy (Fellow)

Botanical Society of Scotland (Ordinary Member)

Royal Society of Biology (Affiliate Member)

British Ecological Society (Ordinary Member)

Royal Scottish Geographical Society (Ordinary member)

EdinbR R User Group (Ordinary member)

REFERENCES

PhD supervisor

Dr. Kyle G. Dexter

Reader

School of GeoSciences

University of Edinburgh

Email: kyle.dexter@ed.ac.uk

Current line manager

Dr. Casey M. Ryan

Professor

School of GeoSciences

University of Edinburgh

Email: casey.ryan@ed.ac.uk

Academic advisor

Dr. Caroline Nichol

Reader

School of GeoSciences

University of Edinburgh

Email: caroline.nichol@ed.ac.uk