

Tim CD Lucas

PERSONAL INFORMATION

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PRESENT APPOINTMENT

	<i>2016–Present</i>	University of Oxford, Malaria Atlas Project
<i>Post Doc.</i>		My current position is as a postdoctoral research scientist in geospatial epidemiology with the Malaria Atlas Project at the University of Oxford. I have made large contributions to the <i>first high resolution, global, space-time</i> estimates of both <i>Plasmodium falciparum</i> and <i>P. vivax</i> leading to two high-profile publications. To this end I have developed new statistical methods that combine <i>machine learning</i> and <i>geostatistics</i> . I have also supervised research assistants on smaller projects, leading to one publication.

PREVIOUS APPOINTMENTS

	<i>2018–2019</i>	Shared parental leave
<i>Parental leave</i>		Six months shared parental leave.
	<i>Jan–July 2016</i>	CBER, UCL
<i>Research Programmer</i>		I was the staff programmer for the Centre of Biodiversity and Environment Research at UCL. I worked on two main projects. I worked with the Madingley Model to enable this ecological model to run on a <i>high performance cluster</i> . Secondly, I translated code from <i>Mathematica to R</i> for analyses of measurements of 3D objects used in <i>paleontological research</i> .

EDUCATION

	<i>2012–2016</i>	University College London, CoMPLEX
<i>PhD</i>		<i>The role of population structure and size in determining bat pathogen richness</i> I used <i>network epidemiological models</i> and phylogenetic methods to study the epidemiology of bat-borne diseases with applications to zoonotic surveillance. I conceived the projects and managed my own budget. [pdf] Supervisors: PROF. KATE JONES & DR HILDE HERBOTS
	<i>2011–2012</i>	University College London, CoMPLEX
<i>MRes</i>		<i>Modelling Biological Complexity · Merit</i> Projects included adapting ' <i>ideal gas</i> ' models to acoustic data, analysing moment closures for a <i>pair-approximation</i> model of plant ecology and applying a novel <i>machine learning</i> method to a library of bat calls.
	<i>2006–2010</i>	University of Sheffield, Animal & Plant Sciences
<i>MBioSci</i>		<i>Zoology · First</i> For my final project I used <i>wavelet</i> analysis to study multi-annual <i>cycles in malaria</i> incidence in Thailand.

OTHER RESEARCH EXPERIENCE

Internship	Autumn 2014	Zoön: An R package for reproducible SDMs
		I wrote the first version of an R package for <i>reproducible</i> species distribution modelling. [Github]
Volunteer Fieldwork	2011	Smithsonian Tropical Research Institute and Chiloé Silvestre, Chile
		Fieldwork in Panamá and Chile: <i>Anolis dewlap</i> evolution, gut length plasticity in Red-eyed tree frogs and two weeks trapping Darwin's foxes.
Summer Internship	August 2010	University of Sheffield
		I studied the evolutionary response of plant communities to climate change. I collected, propagated and analysed plants collected from the field.
TRANSIT Internship	August 2009	University of York, YCCSA
		I studied collective foraging behaviour by programming a <i>complex 3D foraging model</i> in Java and running large simulations.

OTHER APPOINTMENTS AND AFFILIATIONS

Peer Review	Journals Reviewed for:
	Journal of Theoretical Biology, Methods in Ecology and Evolution, BMC Infectious Diseases, PLoS Pathogens, Malaria Journal, ROpenSci, National Academy Science Letters.

PEER-REVIEWED PUBLICATIONS

2019	Weiss DJ, Lucas TCD , Nguyen M, <i>et al.</i> (2019) <i>The global landscape of Plasmodium falciparum prevalence, incidence, and mortality 2000–2017</i> . The Lancet. doi: 10.1016/S0140-6736(19)31097-9 [pdf]
	Battle KE, Lucas TCD , Nguyen M, <i>et al.</i> (2019) <i>Mapping the global endemicity and clinical burden of Plasmodium vivax 2000–2017</i> . The Lancet. doi: 10.1016/S0140-6736(19)31096-7 [pdf]
	Zhu SJ, <i>et al.</i> (2019) <i>The origins and relatedness structure of mixed infections vary with local prevalence of P. falciparum malaria</i> . eLife 8 e40845. doi: 10.7554/eLife.40845 [pdf]
2018	Weiss DJ, Nelson A, Gibson HS <i>et al.</i> (2018) <i>A global map of travel time to cities to assess inequalities in accessibility in 2015</i> . Nature 553 (7688), 333 [pdf]
	Pfeffer D, Lucas TCD , May D <i>et al.</i> (2018) <i>malariaAtlas: an R interface to global malariometric data hosted by the Malaria Atlas Project</i> . Malaria Journal 17:352 doi: 10.1186/s12936-018-2500-5 [pdf]
2017	Redding D, Lucas TCD , Blackburn T & Jones KE. (2017) <i>Evaluating Bayesian spatial methods for modelling species distributions models with clumped and restricted data</i> . PLoS One [pdf]
	Golding N, August TA, Lucas TCD , Gavaghan DJ, van Loon EE & McNerny G. (2017) <i>The zoon R package for reproducible and shareable species distribution modelling</i> . Methods in Ecology and Evolution. doi: 10.1111/2041-210X.12858 [pdf]
2015	Lucas TCD* , Moorcroft EA*, Freeman R, Rowcliffe MJ & Jones KE. (2015) A

generalised random encounter model for estimating animal density with remote sensor data. *Methods in Ecology and Evolution*. doi: 10.1111/2041-210X.12346 [pdf]

- 2013 Walters CL, Collen A, **Lucas TCD**, Mroz K, Sayer CA and Jones KE. (2013) Challenges of Using Bioacoustics to Globally Monitor Bats. in *Bat Evolution, Ecology, and Conservation*. Springer New York. 479-499.

* Co-first authors.

GLOBAL BURDEN OF DISEASE PUBLICATIONS

- 2018 GBD 2017 Risk Factor Collaborators (2018) *Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017*. *The Lancet*, 392 [pdf]
- GBD 2017 Disease and Injury Incidence and Prevalence Collaborators (2018) *Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017*. *The Lancet*, 392 [pdf]
- GBD 2017 DALYs and HALE Collaborators (2018) *Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017*. *The Lancet*, 392 [pdf]
- GBD 2017 Mortality Collaborators (2018) *Global, regional, and national age-sex-specific mortality and life expectancy, 1950–2017: a systematic analysis for the Global Burden of Disease Study 2017*. *The Lancet*, 392 [pdf]
- GBD 2016 Healthcare Access and Quality Collaborators (2017) *Measuring performance on the Healthcare Access and Quality Index for 195 countries and territories and selected subnational locations: a systematic analysis from the Global Burden of Disease Study 2016*. *The Lancet*, 391 (10136) [pdf]
- 2017 GBD 2016 Disease and Injury Incidence and Prevalence Collaborators (2017) *Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016*. *The Lancet*, 390 [pdf]
- GBD 2016 Causes of Death Collaborators (2017) *Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: a systematic analysis for the Global Burden of Disease Study 2016*. *The Lancet*, 390 [pdf]
- GBD 2016 DALYs and HALE Collaborators (2017) *Global, regional, and national disability-adjusted life-years (DALYs) for 333 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016*. *The Lancet*, 390 [pdf]
- GBD 2016 SDG Collaborators (2017) *Measuring progress and projecting attainment on the basis of past trends of the health-related Sustainable Development Goals in 188 countries: an analysis from the Global Burden of Disease Study 2016*. *The Lancet*, 390 [pdf]

PEER-REVIEWED CONFERENCE PROCEEDINGS

- 2019 **Lucas TCD**, Nandi A, Nguyen M, *et al.* (2019) *Model ensembles with different response variables for base and meta models: malaria disaggregation regression combining prevalence and incidence data*. ISI World Statistics Congress Proceedings (In press)
- 2018 Law HC, Sejdinovic D, *et al.* (2018) *Variational learning on aggregate outputs with Gaussian processes*. *Advances in Neural Information Processing Systems* [pdf]

INVITED CONFERENCE TALKS

2017 *Predicting malaria risk from diverse and multilevel data.*
Plenary at [SDCS2017](#), Springer

SOFTWARE

Pfeffer D, **Lucas TCD**, May D, Keddie S, Rozier J, Gibson H. *malariaAtlas: An R Interface to Open-Access Malaria Data, Hosted by the 'Malaria Atlas Project'.*
www.github.com/malaria-atlas-project/malariaAtlas

Lucas TCD, Python A, Redding D. *INLAutils: Utility Functions for 'INLA'.*
www.github.com/timcdlucas/INLAutils

Goswami A, **Lucas TCD**, Sivasubramaniam P, Finarelli J. *A Maximum Likelihood Approach to the Analysis of Modularity.* www.github.com/timcdlucas/EMMLi

Lucas TCD, Goswami A. *paleomorph: Geometric Morphometric Tools for Paleobiology.* www.github.com/timcdlucas/paleomorph

August T, **Lucas TCD**, Golding N, van Loon E, McNerny G. *Zoon: Reproducible, Accessible & Shareable Species Distribution Modelling.*
[www.github.com/zoona](http://www.github.com/zooproject/zoona)

Lucas TCD. *palettetown: Use Pokemon Inspired Colour Palettes*
www.github.com/timcdlucas/palettetown

TEACHING AND SUPERVISION

2019 · Thesis committee for PhD student Dan Pfeffer.

2018 · Supervised two research assistants on side projects resulting in one publication ([pdf](#)).

2017 · Wrote and gave a two day workshop 'Geospatial statistics with R and INLA' at UiTM, Malaysia.

2015 · Demonstrator for reproducible species distribution modelling workshop run by Quantitative Ecology special interest group at BES.

2013–2014 · Online tutor for [SysMIC](#), a course for teaching quantitative skills to biologists.

COMPUTATIONAL SKILLS

<i>Statistical methods</i>	Geospatial statistics, machine learning, Bayesian inference.
<i>Languages</i>	R (eight years), Python, Matlab, Mathematica, Java, SQL.
<i>Other</i>	Experience in R package development, Git/Github, unit testing, continuous integration, shell/ssh and high performance computing.

REFEREES

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