OSCAR RODRIGUEZ DE RIVERA ORTEGA

Lecturer in Statistics
Statistical Ecology at Kent
University of Kent
Canterbury (UK)

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Summary

I am Statistical Ecologist working as a Lecturer in Statistics at the University of Kent. My research involves the development and use of complex spatio-temporal statistical models, geographic information systems (GIS), and working collaboratively in a multi-disciplinary environment.

My research interests include:

- Spatial and spatio-temporal models applied to species distribution.
- Understanding the effects and causality of environmental disturbances such as forest fires, pests, pollutants and climate change.
- Applications of statistics in environmental science and conservation.

Education

University of Valencia   *Valencia, Spain*
PH.D IN STATISTICS   *2019*

    Thesis: Spatio Temporal Modeling of Species Distribution
    Supervisors: Professor Antonio López-Quílez (University of Valencia)
                   Professor Marta Blangiardo (Imperial College of London)

University of Valencia   *Valencia, Spain*
MSc IN BIOSTATISTICS   *2013*

    Thesis: Modelling species distribution of the III National Forest Inventory (Spain)

University of Oviedo   *Mieres, Spain*
B.ENG. FOREST ENGINEERING   *2010*

- **Thesis**: Nocturnal lepidoptera inventory of Atlantic Islands National Park (Cíes, Ons, Sálvora y Cortegada) (Galicia, Spain)

University of Kent   *Canterbury, UK*
POSTGRADUATE CERTIFICATE IN HIGHER EDUCATION (PGCHE)   *2021 -*

Work Experience

University of Kent, School of Mathematics, Statistics and Actuarial Sciences   *Canterbury, UK*
LECTURER IN STATISTIC   *Sept. 2021 - Present*

- Teaching Undergraduate and Master modules (Foundation Statistics, Predictive Modelling).
- Supervisor in Undergraduate and Postgraduate Projects.
- Create new modules in Undergraduate and Postgraduate courses.

Statistical Ecology @ Kent, University of Kent   *Canterbury, UK*
PDRA IN STATISTICS

Topic: Modelling removal and re-introduction data for improved conservation.   *Jun. 2019 - Sept. 2021*

- Model development for removal data.
- Develop software for removal modelling.
- Assist partners organisation in use and application of new software.

Thames Water Utilities
Reading, UK
DATA SCIENTIST
Jan. 2017 - Jun. 2019
- Part of the Energy team and Data Factory ensuring effective delivery of the sub metering of our major sites.
- Responsible for data analysis, looking for potential energy savings.
- Working closely with Engineers, interpreting, identifying and analyzing complex and large data sets using statistical techniques and providing ongoing reports.
- Assisting the team with mathematical issues outputs/results comprehension.

Cyient/DEFRA Rural Payments Agency
Reading, UK
GIS ANALYST
Jun. 2016 - Jan. 2017
- Working in PLCD (Proactive Land Change Detection) project for the Rural Payments Agency (RPA – DEFRA).
- Analysed and interpreted OS MasterMap, Aerial Photography, and Satellite Imagery to identify and capture changes within the land parcels. Used Excel, database and GIS software (similar to ArcGIS) to manage workload, and update and maintain accurate records. Communicated with the client, technical support, and quality assurance to verify accuracy, resolve issues, and maintain high accuracy.
- Successfully maintained accurate records and strict compliance with all updated procedures and protocols by leveraging multitasking, flexibility, and continuous drive to keep current on new, evolving, and updated protocol rules.

Imperial College of London
London, UK
VISITING RESEARCHER
Apr. 2015 - Dec. 2016
- Using SPDE for species distribution in ecology.
- Spatial and Spatio-Temporal modelling of forest trees.
- Spatio-Temporal distribution of vegetation using environmental and pollution data.

Wipro Technologies Inc. - Eco Energy
Reading, UK
DATA SCIENTIST
Mar. 2015 - Jun. 2016
- Interpret energy and environmental data, analyze results using statistical techniques and provide ongoing reports.
- Identify, analyze, and interpret trends or patterns in complex data sets.
- Assist engineering team with mathematical issues outputs/results comprehension.

Cyient/DEFRA Rural Payments Agency
Reading, UK
GIS ANALYST
Mar. 2014 - Mar. 2015
- Working in BAU (Business As Usual) project for the Rural Payments Agency (RPA – DEFRA).
- Detecting changes in dimensions, vegetation, infrastructure, ownership and boundaries, using topographic maps, Ordnance Survey MasterMap, aerial photography, remote sensing data, vectorial data and technical inspections.
- Mapping and digitising land parcels within RPA's regulation protocol by using built on software (iSmart).
- Updating the RPA's national geo-database for land parcels in order to meet EU regulations.

TRAGSA
Madrid, Spain
TECHNICIAN - *National defense campaign against wildfires*
2013
- Studying environmental variables and developing statistical modelling and cartography to predict causality and distribution of forest fires.

University of Valencia
Valencia, Spain
RESEARCH ASSISTANT
Sep. 2012 - Jul. 2013
- **Topic**: Modelling species distribution of the III National Forest Inventory (Spain).

IGM S.L.
Ouezzan, Morocco
PROJECT COORDINATOR - *Project Arboriculture Fruitere en zones pluviales au Nord du Maroc*
Jan. 2012 - Oct. 2012
- Environmental improvement by crop diversification.
- Environmental project development.
- Work team coordination and management.

School of Forestry Engineering and Natural Resources, Polytechnic University of Madrid
Madrid, Spain
ASSISTANT PROFESSOR
Sep. 2010 - Oct. 2012
- Assistant Professor of Zoology and Forest Pathology (Diseases and Plagues) working with **Professor Ignacio Martin-Sanz**.

School of Forestry Engineering and Natural Resources, Polytechnic University of Madrid
Madrid, Spain
RESEARCH ASSISTANT
May 2008 - Apr. 2010
- **Topic**: Nocturnal lepidoptera inventory of Atlantic Islands National Park (Cíes, Ons, Sálvora y Cortegada) (Galicia, Spain)"
- Capture and identification of nocturnal Lepidoptera.
- Developing GIS analysis and species distribution modelling (SDM).

Mentoring

Research

PhD co-supervisor   *ongoing*

   Danielle Hendricksen: New statistical models for smartphone app data on recreational fishing.
   Supervisory team: Dr Eleni Matechou; Dr Oscar Rodriguez de Rivera Ortega; Dr Kieran Hyder (Cefas); David Maxwell (Cefas)

Teaching

MSc thesis co-supervisor   *2021/2022*

   Aloma Riera Rodriguez: *Malpolon monspessulanus* abundance in Montes de Toledo (Spain)
   Supervisory team: Dr Ignacio Martín-Sanz (UPM, Spain); Dr Oscar Rodriguez de Rivera Ortega

   Aidan Murray: Exam and operational performance of train drivers
   Supervisory team: Greg Tallent (Southeastern Railway, UK); Dr Oscar Rodriguez de Rivera Ortega

Supervisor of Discovering and Communicating Mathematics (MAST6704)   *2021/2022*

   Supervising group of students on project **"Data storytelling"**.

Supervisor of Year in Data Analytics Projects (MA5957)   *2020/2022*

   Supervising group of students on project **"Covid19 dataset"**.
   Supervising group of students on project **"Spatial analysis of flooded areas in Europe"**.

Supervisor Nuffield Research Placement Project   *2019*

   Project: A spatio-temporal model to understand forest fires causality in Europe.

Collaborations

Forest Fires Lab, Spanish National Research Council

Project leader   *ongoing*

   A spatio-temporal model to understand large forest fires in the Mediterranean basin.

The Mauritian Wildlife Foundation (MWF); Professor Rachel McCrea

Project leader   *ongoing*

   A spatio-temporal model to analyse invasive species dispersion
   Joint species distribution modelling to analyse coexistent species

Professor Marta Blangiardo (Environmental and Health Statistics Group - Imperial College of London)

Project leader   *ongoing*

   Analysing the effects of urban tree species on levels of pollution (PM10) in space and time.

Dr Eleni Matechou (Statistical Ecology @ Kent, University of Kent)

Collaborator   *ongoing*

   New statistical models for smartphone app data on recreational fishing

Dr Aitor Gaston (Department of Ecology, Polytechnic University of Madrid)

Collaborator   *ongoing*

   Modelling joint species distribution of National Forest Inventory (Spain)

Professor Ignacio Martin (Department of Vegetal Production, Polytechnic University of Madrid) and National Parks of Spain

Collaborator   *ongoing*

   Estimating spatial distribution of endangered reptiles in protected areas.

Dr Rafaela Cobucci Cerqueira (Universidade Federal de Lavras (UFLA)

Collaborator   *ongoing*

   Direct and indirect effects of roads on space-use by jaguars in Brazil.

Dr Margarita Pazmani (Universidad de Málaga)

Collaborator   *ongoing*

   Using animal trail networks to analyse animal movement and management.

Associate Professor Manuela Gonzalez-Suarez, & Pablo Medrano-Vizcaíno (University of Reading)

COLLABORATOR *ongoing*

National assessment of wildlife mortality in the biodiverse country of Ecuador: an effort from citizens and academia to analyse roadkill data at a country scale.

Forest Fires Lab, Spanish National Research Council

COLLABORATOR *2019-2021*

Prescribed burning to reduce fire severity: effects on pine forests of the Iberian peninsula

Nia Thomas (University of Cardiff)

COLLABORATOR *2019-2021*

Estimating population size of otters from fresh spraint counts.

Grants

Spanish Government National Scheme (2020). Agencia Estatal de Investigacion (AEI) *Granted*

RESEARCHER CO-INVESTIGATOR (RCoI) WITH SPANISH NATIONAL RESEARCH COUNCIL (CSIC) *2021*

ENFIRES: "Aumento de la resiliencia a los incendios de los sistemas forestales mediterráneos". Total budget: €100,000

TCall for SR&TD Project Grants (2022). The Foundation for Science and Technology (FCT). Ministry of Science, Technology and Higher Education (Portugal) *Submitted*

RESEARCHER CO-INVESTIGATOR (RCoI) WITH CESAM CENTRE FOR ENVIRONMENTAL AND MARINE STUDIES, FACULDADE DE CIENCIAS DA UNIVERSIDADE DE LISBOA *2022*

GlobalSyn: "Global synthesis of the impact of roads on wildlife and implications for mitigation". Total budget: €250,000

TCall for SR&TD Project Grants (2020). The Foundation for Science and Technology (FCT). Ministry of Science, Technology and Higher Education (Portugal) *Rejected 7.8/10*

RESEARCHER CO-INVESTIGATOR (RCoI) WITH CESAM - CENTRE FOR ENVIRONMENTAL AND MARINE STUDIES, FACULDADE DE CIENCIAS DA UNIVERSIDADE DE LISBOA *2021*

GlobalSyn: "Global synthesis of the impact of roads on wildlife and implications for mitigation". Total budget: €250,000

EPSRC new investigator award/Future Leader Fellowship, UK Research and Innovation (UKRI), UK *In preparation*

PRINCIPAL INVESTIGATOR (PI) *2022*

Understanding impact and causality of Wildfires in Mediterranean environments (Land use, Land cover and socioeconomic factors)

Teaching Experience

- **Foundation Statistics**. Stage 1. University of Kent. Autumn/Spring Term 2021/22
- **Predictive Modelling**. Year in Data Analytics. University of Kent. Autumn Term 2020/21 and 2021/22
- **Probability (Tutorials)**. Stage 1. University of Kent. Autumn Term 2021/22
- **Statistics (Tutorials)**. Stage 1. University of Kent. Spring Term 2020/21
- **Advanced Regression Models (Tutorials)**. MSc Epidemiology. Imperial College of London. Spring Term 2016
- **Zoology and Forest Pathology (Diseases and Plagues)**. BEng Forestry and Natural Environment. Polytechnic University of Madrid. Courses 2010/11 and 2011/12

- **Ecological Modelling: from field to lab.** 2 weeks course to understand the process from field sampling to statistical modelling. (In preparation - April 2023)

- **Introduction to INLA and inlabru** April 2022 (4 days)
  PhD training activity specially aimed at students from the Natural Resources Doctoral Area (University of Oviedo). (online)

- **Bayesian Statistics for Ecologists with INLA and inlabru.** April 2022 (5 days)
  PhD training activity specially aimed at students from the Agro-Forestry and Environment Doctoral Area (UPM). (online)

- **Statistics for natural resources.** (2nd edition) December 2021 (5 days)
  PhD training activity specially aimed at students from the Agro-Forestry and Environment Doctoral Area (UPM). (online)

- **Statistics for natural resources.** November 2020 (5 days)
  PhD training activity specially aimed at students from the Agro-Forestry and Environment Doctoral Area (UPM). (online)

Publications

IN PREPARATION

- **Oscar Rodriguez de Rivera** and, Marta Blangiardo. (2022). *A spatio-temporal model to understand the effect of urban trees in pollution levels (PM10): a case study in London.* (To be submitted to Journal of Applied Ecology).

- **Oscar Rodriguez de Rivera** and, Rachel McCrea. (2022). *Analysing dispersion of invasive species through joint spatio-temporal approach.*

SUBMITTED

- **Oscar Rodriguez de Rivera**, Juncal Espinosa, Javier Madrigal and, Marta Blangiardo. (2022). *A point-process spatio temporal model to understand wildfires in the Mediterranean basin.* (Submitted to Environmetrics).

- **Oscar Rodriguez de Rivera**, Antonio López-Quílez, Marta Blangiardo and, Martyna Wasilewska. (2022). *A spatio-temporal model to understand forest fires causality in Europe.* arXiv preprint arXiv:2003.05227 (2020). 14 Pages (Submitted to European Journal of Forest Research).

PUBLISHED

- Megan Laxton, **Oscar Rodriguez de Rivera**, and Janine Illian. (2021). *Using Complex Spatio-temporal Structures to Account for Population Dynamics in Species Distribution Models.* (**In Press** in Methods in Ecology and Evolution; Invited paper for special issue: Realising the promise of large data and complex models).

- Rafaela Cobuci Cerqueira, **Oscar Rodriguez de Rivera**, Jochen A. G. Jaeger and, Clara Grilo. (2021). *Direct and indirect effects of roads on space use by jaguars in Brazil.* Scientific Reports (Accepted October 2021). https://doi.org/10.1038/s41598-021-01936-6

- Juncal Espinosa, Dario Martin-Benito, **Oscar Rodriguez de Rivera**, Mercedes Guijarro, Carmen Hernando and, Javier Madrigal. (2021). *Tree growth response to prescribed burning in mixed and pure Pinus nigra stands: effects of burn season and fire severity.* Applied Sciences (Accepted August 2021). https://doi.org/10.3390/app11167462

- **Oscar Rodriguez de Rivera**, Rachel McCrea. (2021) *Removal modelling in ecology: A systematic review* Plos One (Accepted January 2021). https://doi.org/10.1371/journal.pone.0229965

- Juncal Espinosa, **Oscar Rodriguez de Rivera**, Javier Madrigal, Mercedes Guijarro and, Carmen Hernando. (2020). *Use of Bayesian Modeling to Determine the Effects of Meteorological Conditions, Prescribed Burn Season, and Tree Characteristics on Litterfall of Pinus nigra and Pinus pinaster Stands.* Forests (Accepted September 2020). https://doi.org/10.3390/f11091006

- Juncal Espinosa, **Oscar Rodriguez de Rivera**, Javier Madrigal, Mercedes Guijarro and, Carmen Hernando. (2020) *Predicting potential cambium damage and fire resistance in Pinus nigra Arn. ssp. salzmannii.* Forest Ecology and Management (Accepted June 2020). https://doi.org/10.1007/s12080-018-0387-y

- **Oscar Rodriguez de Rivera**, Marta Blangiardo, Antonio López-Quílez and, Ignacio Martín-Sanz. (2019). *Species distribution modelling through Bayesian hierarchical approach.* Theoretical Ecology. (Accepted June 2018). https://doi.org/10.1007/s12080-018-0387-y

- **Oscar Rodriguez de Rivera**, Antonio López-Quílez and, Marta Blangiardo. (2018). *Assessing the Spatial and Spatio-Temporal Distribution of Forest Species via Bayesian Hierarchical Modeling.* Forests (Accepted September 2018). https://doi.org/10.3390/f9090573

- **Oscar Rodriguez de Rivera**, and Antonio López-Quílez. (2017). *Development and comparison of species distribution models for forest inventories.* ISPRS International Journal of Geo-Information (Accepted June 2017). https://doi.org/10.3390/ijgi6060176

Books
- Isabel Angulo Ardoy, **Oscar Rodriguez de Rivera** and, Pablo Cobos. (2015). *Lepidópteros diurnos del Parque Nacional MarítimoTerrestre de las Islas Atlánticas de Galicia [Diurnal Lepidoptera of the Atlantic Islands of Galicia National Park]* Coleccion: Naturaleza y Parques Nacionales. Serie: Técnica. ISBN: 978-84-8014-882-5

Talks

INVITED CONFERENCE TALKS

- **Royal Statistical Society Conference** Sep. 2020
  The Importance of spatio-temporal modelling in Ecology.

SEMINARS

- **Polytechnic University of Madrid. PhD in Advanced Forest Research seminar series**. April. 2022
  Spatial Models to understand complex ecosystems

- **Polytechnic University of Madrid. PhD in Advanced Forest Research seminar series**. May. 2021
  Spatio temporal models in Forest Ecosystems

- **Newcastle University**. April. 2021
  Spatio temporal models in Ecology

- **National Centre for Statistical Ecology**. March. 2021
  Joint Species Distribution Modelling with HMSC: Community matters

- **Polytechnic University of Madrid. PhD in Advanced Forest Research seminar series**. May. 2020
  Creative Statistics

- **University of Leeds. Mathematical-Biology-Medicine (MBM) seminar series**. Oct. 2019
  Spatial and Spatio-Temporal Models To Understand Ecological Processes

- **Polytechnic University of Madrid. PhD in Advanced Forest Research seminar series**. Jan. 2019
  Understanding forest ecosystems through Bayesian hierarchical approach

- **Mathematical Sciences Institute. Spanish National Research Council**. Jan. 2019
  Spatio temporal modelling of species distribution

- **Forest Research Center. Spanish National Research Council**. Apr. 2018
  Spatial and Spatio temporal models of species distribution and their applications

CONTRIBUTED TALKS

- **Royal Statistical Society Conference**. Sep. 2022
  Joint spatial models to understand complex ecological processes

- **International Conference of Geostatistics for Environmental Applications**. Jun. 2022
  A marked point-process spatio temporal model to understand forest fires in the Mediterranean basin

- **Spanish Conference on Statistics and Operations Research**. Jun. 2022
  Joint spatial models to understand complex ecological processes

- **British Ecological Society Meeting**. Dec. 2021
  Strangers in the night: applying HSMC to light trap community data

- **Royal Statistical Society Conference**. Sep. 2021
  Joint Species Distribution Modelling with HMSC: Community matters

- **International Statistical Ecology Conference (ISEC)**. Jun. 2020
  Assessing the Spatio-Temporal Distribution of Invasive Species

- **BES Quantitative Ecology Online Meeting 2020**. Jul. 2020
  A Spatio-Temporal Model of Areal Data for Species Distribution

- **British Ecological Society Meeting** Dec. 2019
  A Spatio-Temporal Model to Understand Forest Fires Causality

- **Statistical Ecology Research Festival**. Jul. 2016
  Spatio temporal modelling of species distribution

- **Autumn Meeting on Latent Gaussian Models**. Sep. 2015
  Using SPDE for species distribution in Ecology

Other Information

Guest Co-Editor
"Spatio-Temporal Dynamics of Species", A special issue of Applied Sciences (ISSN 2076-3417). MDPI.
Reviewer
Nature, MDPI, PlosOne, Journal of Applied Ecology.

ADMINISTRATIVE ROLES

Co-coordinator of Seminar Series at NCSE
Member of Stats Desk at the University of Kent
Interview panel Year in Data Analytics
Academic advisor

MEMBERSHIP

British Ecological Society (BES)
Royal Statistical Society (RSS)
National Centre for Statistical Ecology (NCSE)