

## OSCAR RODRIGUEZ DE RIVERA ORTEGA

Postdoctoral Research Associated in Statistics  
Statistical Ecology at Kent  
University of Kent  
Canterbury (UK)

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## Summary

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I am Statistical Ecologist working as a Postdoctoral Research Associate at the University of Kent on the EPSRC project 'Modelling removal and re-introduction data for improved conservation' with Professor Rachel McCrea. 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

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### 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)

## Work Experience

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### Statistical Ecology @ Kent, University of Kent

Canterbury, UK

PDRA IN STATISTICS

**Topic:** Modelling removal and re-introduction data for improved conservation.

Jun. 2019 - Present

- Supplementing data types and optimal sampling design at removal sites.
- Model developments for removal data.
- A "success" metric for re-introductions.
- Automation of model selection and assessment.
- Software development and dissemination.

### 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 the 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 Fruiterie 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

### PHD CO-SUPERVISOR

ongoing

**Danielle Hendricksen:** New statistical models for smartphone app data on recreational fishing.

**Supervisory team:** Dr Eleni Matechou; Dr Maria Kalli; Dr Oscar Rodriguez de Rivera Ortega; Dr Kieran Hyder (Cefas); David Maxwell (Cefas)

### SUPERVISOR NUFFIELD RESEARCH PLACEMENT PROJECT

ongoing

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

Supervising group of students on project “Covid19 dataset”.

## Collaborations

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### Forest Fires Lab, Spanish National Research Council

PROJECT LEADER

ongoing

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

### 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.

### Professor Janine Illian, Dr Colin Torney & Megan Laxton (University of Glasgow)

COLLABORATOR

ongoing

Observing complex observation processes into population models using inlabru.

### Nia Thomas (University of Cardiff)

COLLABORATOR

ongoing

Estimating population size of otters from fresh spraint counts.

### 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 (School of Biological and Environmental Sciences - Liverpool John Moores University)

COLLABORATOR

ongoing

Using animal trail networks to analyse animal movement and management.

### Forest Fires Lab, Spanish National Research Council

COLLABORATOR

2019-2021

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

## Grants

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### TCall for SR&TD Project Grants (2021). 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

2021

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

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

Submitted

RESEARCHER CO-INVESTIGATOR (RCOI) WITH SPANISH NATIONAL RESEARCH COUNCIL (CSIC)

2020

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

### 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

2020

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

## Teaching Experience

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- **Predictive Models.** Year in Data Analytics. University of Kent. Autumn Term 2020
- **Statistics (Tutorials).** Stage 1. University of Kent. Spring Term 2020-2021
- **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 2010/2011, 2011/2012

### SHORT COURSES

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

## Publications

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### IN PREPARATION

- Megan Laxton, **Oscar Rodriguez de Rivera**, Janine Illian and, Colin Torney. (2021). *Observing complex observation processes into population models using inlabru*. (To be submitted to Special Feature in Methods in Ecology and Evolution: Realising the promise of large data and complex models).
- **Oscar Rodriguez de Rivera**, Juncal Espinosa, Javier Madrigal and, Marta Blangiardo. (2021). *A point-process spatio temporal model to understand wildfires in the Mediterranean basin*. (To be submitted to Journal of Biogeography).
- **Oscar Rodriguez de Rivera** and, Marta Blangiardo. (2021). *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).
- Ruth King, **Oscar Rodriguez de Rivera** and, Rachel McCrea. (2021). *Multiple systems estimation in the presence of censored cells*. (In prep.)

### SUBMITTED

- Rafaela Cobuci Cerqueira, **Oscar Rodriguez de Rivera**, Jochen A. G. Jaeger and, Clara Grilo. (2020). *Direct and indirect effects of roads on space use by jaguars in Brazil*. (Submitted to Biological Conservation).
- **Oscar Rodriguez de Rivera**, Antonio López-Quílez, Marta Blangiardo and, Martyna Wasilewska. (2020). *A spatio-temporal model to understand forest fires causality in Europe*. arXiv preprint arXiv:2003.05227 (2020). 14 Pages (Submitted to International Journal of Wildland Fire).
- 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*. (Submitted to Science of the Total Environment).

### PUBLISHED

- **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>

## Talks

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### INVITED CONFERENCE TALKS

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

### SEMINARS

- **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

- **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

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### ROLES IN JOURNALS

#### Co-Guest 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 course 2020/2021

### MEMBERSHIP

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