

# Erik Kusch

SENIOR ENGINEER · BIOSTATISTICIAN · DATA SCIENTIST · MACROECOLOGIST

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## Research Profile

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I am a biostatistician and data scientist specialised in streamlining work-flows as well as integrating and analysing big data. I use and develop quantitative tools to study ecosystem resilience and landscape-scale biodiversity to understand ecosystems trajectories through time and space. My current work includes coordination efforts of European biodiversity data research infrastructures, software development for climate data retrieval and aggregation as well as inference, analysis, and simulation of ecological networks.

## Education

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### PhD in Biology; Specialisation on Ecoinformatics, Data Analysis and Biodiversity

01/2020 - 04/2023

AARHUS UNIVERSITY (AU) & OXFORD UNIVERSITY (OX)

**Dissertation:** A Macroecological Perspective to Ecological Networks - Exploring the Impacts of Climate-Driven Biodiversity Change & Contrasting and Benchmarking Network Inference Approaches

### M.Sc. in Biology; Specialisation on Biodiversity, Ecology and Evolution

08/2017 - 08/2019

UNIVERSITY OF BERGEN (UiB) & NANSEN ENVIRONMENTAL AND REMOTE SENSING CENTER (NANSEN)

**Thesis:** Inferring Vegetation Memory From Remote Sensing Data And Identifying Causal Links To Plant Function

### B.Sc. in Biology

10/2013 - 07/2017

TECHNICAL UNIVERSITY DRESDEN (TUD) & UNIVERSITY OF BERGEN (UiB)

**Thesis:** Remote Sensing And Predicting Shifts In Biome Distribution And Resilience Using NDVI Data

## Specialised Training

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### Open, Reproducible, and Transparent Science in Ecology

Finse, Norway

UNIVERSITY OF BERGEN

14/11/2022 - 18/11/2022

### 7th Edition Species Distribution Modelling Course

Évora, Portugal

UNIVERSITY OF ÉVORA, SCIENCE RETREATS

26/04/2021 - 02/05/2021

### An Introduction to Bayesian Statistics

Glasgow, Scotland

UNIVERSITY OF GLASGOW

06/04/2021 - 16/04/2021

### Hierarchical Modelling of Species Communities with the R-package Hmsc

Helsinki, Finland

UNIVERSITY OF HELSINKI

02/11/2020 - 06/11/2020

### Modelling Challenges for Mountain Ecosystems

Hamburg, Germany

UNIVERSITY OF HAMBURG

23/02/2020 - 28/02/2020

## Experience

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### Senior Engineer / Research Infrastructure Manager

Oslo Norway

NATURAL HISTORY MUSEUM, UNIVERSITY OF OSLO

03/2023 - PRESENT

### Research Fellow

Bergen, Norway

ECOLOGICAL AND ENVIRONMENTAL CHANGE RESEARCH GROUP, UNIVERSITY OF BERGEN

09/2019 - 12/2019

### National Park Ranger & Environmental Education Guide

Saxony, Germany

NATIONAL PARK SAXON-BOHEMIAN SWISS

04/2016 - 06/2016

### Research and Teaching Assistant

BEHAVIOURAL ECOLOGY RESEARCH GROUP, UNIVERSITY OF LEIPZIG

08/2017 - 08/2019; 03/2017 - 04/2017

PRIMATE RESEARCH CENTRE, UNIVERSITY OF KYOTO

07/2018

GERMAN CENTRE FOR MARINE BIODIVERSITY RESEARCH, SENCKENBERG GROUP

05/2017 - 07/2017

### Student Assistant

BOTANICAL INSTITUTE, TECHNICAL UNIVERSITY DRESDEN (TUD)

05/2016 - 08/2016; 02/2015 - 08/2015

ZOOLOGICAL COLLECTION, TECHNICAL UNIVERSITY DRESDEN (TUD)

04/2016 - 05/2016; 11/2013 - 08/2015

# Teaching & Supervision Activity

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## Bayesian Networks Study Group

AUTHOR & LECTURER

[Personal Course Web Page](#)

## AU Bayes Study Group

AUTHOR & LECTURER

[Personal Course Web Page](#)

## Excursions into Biostatistics

AUTHOR & LECTURER

[Course Web Page](#)

## An Introduction to Biostatistics Using R

AUTHOR & LECTURER

[Course Web Page](#)

## Biological Research in Theory and Praxis (BFTP)

AUTHOR

[Course Web Page](#)

## Teaching Assistant

APPLIED STATISTICS

Aarhus University

STATISTICAL AND GEOSPATIAL MODELLING

22/03/2021 - 14/05/2021

GEOSPATIAL INFORMATION SYSTEMS

03/09/2020 - 18/12/2020

27/10/2020 - 18/12/2020

## Instructor & Advisor

ECOINFORMATICS & BIODIVERSITY MASTERS SEMINARS (EBMS), AARHUS UNIVERSITY

03/02/2021 - 05/05/2021

CENTRE OF EXCELLENCE IN BIODIVERSITY EDUCATION (BIOCEED), UNIVERSITY OF BERGEN

08/2017 - 07/2018

# Talks & Workshops

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## Integrating Ecological Networks in Macroecological Research

AUTHOR & SPEAKER, STADIS TANGLED BANK-SEMINARS

Oslo, Norway

17/08/2023

## Accessing and Referencing GBIF Data for Research

AUTHOR & SPEAKER, LIVING NORWAY COLLOQUIUM 2023

Trondheim, Norway

24/05/2023

## State-of-the-Art Climate Data for Macroecologists with the KrigR Pipeline

AUTHOR & SPEAKER, 5TH CONFERENCE OF NORDIC SOCIETY OIKOS 2022

Aarhus, Denmark

07/07/2022

AUTHOR & SPEAKER, BIOCHANGE METHODS WORKSHOPS

12/11/2020

## Ecological Network Inference - Pipedream or Pipeline

INVITED SPEAKER, SALGO TEAM, UNIVERSITY OF OXFORD

Oxford, England

22/05/2022

## KrigR - Climate Data For Your Spatial Study

SPEAKER, INTERNATIONAL STATISTICAL ECOLOGY CONFERENCE 2020

25/06/2020

## Identifying Ecological-Memory Patterns in Drylands using Remote Sensing

SPEAKER, INTERNATIONAL SOCIETY FOR ECOLOGICAL MODELLING CONFERENCE 2019

04/10/2019

## Spatial Patterns of Plant Performance

INVITED SPEAKER, BIO DAY, UNIVERSITY OF BERGEN

Bergen, Norway

15/03/2019

## Inferring Vegetation Memory from Remote Sensing Data

INVITED SPEAKER, SPATIAL ECOLOGY GROUP, UNIVERSITY OF GLASGOW

Glasgow, Scotland

09/01/2019

# Extracurricular Activity

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## Group Leader

CODERS & BIOSTATISTICIANS OF NHM, UNIVERSITY OF OSLO

08/2023 - PRESENT

NATURAL HISTORY MUSEUM COMPUTATIONAL BIOLOGY HELP-DESK, UNIVERSITY OF OSLO

08/2023 - PRESENT

## Group Member

STADIS – STABILITY AND DISCONTINUITY GROUP, UNIVERSITY OF OSLO

08/2023 - PRESENT

STATISTICS JOURNAL CLUB, UNIVERSITY OF GLASGOW

03/2021 - 03/2023

SPATIAL SHARED-INTEREST GROUP, UNIVERSITY OF GLASGOW

03/2021 - 03/2023

BAYES STUDY GROUP, UNIVERSITY OF BERGEN

09/2018 - 12/2019

## Leader & Dungeon Master

UNIVERSITY OF OSLO NATURAL HISTORY MUSEUM DUNGEONS & DRAGONS GROUP AARHUS UNIVERSITY SECTION

05/2023 - PRESENT

FOR ECOINFORMATICS DUNGEONS & DRAGONS GROUP

03/2022 - 01/2023

# Writing

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## Plant trait and vegetation data along a 1314 m elevation gradient with fire history in Puna grasslands, Perú

AUD HALBRITTER, VIGDIS VANDVIK, SEHOYA COTNER, [...], **ERIK KUSCH**, [...], BRIAN ENQUIST

 *Nature Scientific Data* - 2024

## A Novel Simulation Framework for Validation of Ecological Network Inference

**ERIK KUSCH**<sup>\*</sup>, ANNA C. VINTON<sup>\*</sup> (\* ... JOINT FIRST-AUTHORSHIP)

 *Preprint* - 2023

## Ecological Network Resilience & Extinction Proxies - Updating Projections of Ecological Networks

**ERIK KUSCH**, ALEJANDRO ORDONEZ

 *Preprint* - 2023

## Ecological Network Inference is not Consistent Across Scales or Approaches

**ERIK KUSCH**, MALYON BIMLER, JAMES A. LUTZ, ALEJANDRO ORDONEZ

 *Preprint* - 2023

## NetworkExtinction - R Package to Simulate Extinction Propagation & Rewiring Potential in Ecological Networks

M.ISIDORA ÁVILA-THIEME<sup>\*</sup>, **ERIK KUSCH**<sup>\*</sup>, DEREK CORCORAN<sup>\*</sup>, ..., NAVARRETE, PABLO A. MARQUET (\* ... JOINT FIRST-AUTHORSHIP)

 *Methods in Ecology and Evolution* - 2023

## MOSAIC: A Unified Trait Database to Complement Structured Population Models

CONNOR BERNARD, GABRIEL SILVA SANTOS, [...], **ERIK KUSCH**, [...], ROBERTO SALGUERO-GÓMEZ

 *Nature Scientific Data* - 2023

## A novel trophic cascade between cougars and feral donkeys shapes desert wetlands

ERICK LUNDGREN, DANIEL RAMP, OWEN MIDDLETON, EAMONN WOOSTER, **ERIK KUSCH**, [...], ARIAN WALLACH

 *Journal of Animal Ecology* - 2022

## Vegetation memory effects and their association with vegetation resilience in global drylands

**ERIK KUSCH**, RICHARD DAVY, ALISTAIR SEDDON

 *Journal of Ecology* - 2022

## KrigR - A Tool for Downloading and Statistically Downscaling Climate Reanalysis Data

**ERIK KUSCH**, RICHARD DAVY

 *Environmental Research Letters* - 2022

## Reconciling high resolution climate datasets using KrigR

RICHARD DAVY, **ERIK KUSCH**

 *Environmental Research Letters* - 2021

# Honours & Grants & Awards

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## SCHOLARSHIPS & GRANTS

10/2020	<b>Scholarship for Academically Excellent Students</b> , Frands Christian Frantsen's Scholarship	<i>Aarhus, Denmark</i>
03/2019	<b>Funding for Particularly Talented Students</b> , Lina Asbjørnsens Stipendiefond	<i>Bergen, Norway</i>
02/2019	<b>Fast-Track-Initiative Funding</b> , FTI, Bjerknæssenteret	<i>Bergen, Norway</i>
03/2018	<b>Project Grant</b> , L. Meltzers Høyskolefond	<i>Bergen, Norway</i>
2018/19	<b>Scholarship</b> , German Academic Scholarship Foundation (Studienstiftung des deutschen Volkes)	<i>Bonn, Germany</i>

## AWARDS

10/2019	<b>Best Poster: Student and Early Career Researcher</b> , International Society for Ecological Modelling	<i>Salzburg, Austria</i>
10/2019	<b>Modeller's Choice Poster Award</b> , International Society for Ecological Modelling	<i>Salzburg, Austria</i>