# Martin Jung | Curriculum Vitae

Environmental scientist with broad interests in (Macro-)Ecology, Conservation Biology and Sustainability Science with regards to global change. Specialises on biodiversity indicators, scenarios and biodiversity nexus topics, remote sensing and applied conservation biology. Many years of experience in project management and providing quantitative solutions to environmental problems.

# **Career history**

### Paid employment

Research scholar

International Institute for Applied Systems Analysis (IIASA)

Laxenburg, Austria

March 2021-present

Research on the nexus of land-use, climate and biodiversity. Project management, funding acquisition and technical development using optimisation, machine learning and simulation based approaches.

International Institute for Applied Systems Analysis (IIASA)

Laxenburg, Austria

Postdoctoral Research scholar

April 2019–February 2021

Developing new global integrated biodiversity, carbon and ecosystem services maps and models using global data aggregation and optimisation routines

**University of Sussex** 

Brighton, UK

Associate doctoral tutor

January 2017–March 2019

Assisted in the teaching and marking of biology and geography courses for BSc and MSc students. Led one day intensive workshops in GIS & data analysis for graduate students.

Lund university - Centre for Sustainability studies

Lund, Sweden

Research assistant

*February 2015–September 2015* 

Worked for the AGROMES project (funded by the Swedish research council) mapping the environmental, economic, and social tradeoffs of European farming systems across scales. Involved the acquisition, manipulation, analysis and visualisation of economic and environmental data. Collaboration with the University of British Columbia and Sussex University

Imperial College London

London, UK

External database contractor

October 2014–August 2015

Developed, implemented and administrated a spatially explicit relational database (PostgreSQL & PostGIS) for the BIOFRAG project. Wrote parsing scripts and SQL queries for database maintenance.

University of Copenhagen

Copenhagen, Denmark

Laboratory assistant

May 2013–April 2015

Laboratory and field work as well as statistical analyses in biological pest control (Fruitgrowth, Softpest, INBIOsoil) projects.

#### gaiac - research institute

Aachen, Germany

Research assistant

September 2012-October 2012

GIS and statistical analyses around the Virtual Forest project and urban ecology. Conducted plant vegetation surveys on windfall calamity areas.

#### Solarenergie-Förderverein Deutschland e.V.

Aachen, Germany

Part-time database maintainer

*July 2006–May 2013* 

Database maintenance and user support of the largest database for solar panel owners in Germany.

### Internships & Volunteer activities

Leipzig, Germany

Helmholtz-Zentrum für Umweltforschung - UFZ Internship

September 2011–October 2011

GIS analyses for habitat connectivity and restoration.

#### SAVE wildlife conservation fund

Wülfrath, Germany

Volunteer project leader

May 2011–September 2012

Responsible for coordinating social media and stake holder interactions in Cameroon and the USA.

#### University of Marburg

Bialowieza Forest, Poland

Volunteer

Spring 2011 & Summer 2012

Assistance in ornithological field surveys in temperate forests.

#### **NLWKN**

Langeoog, Germany

Assistant national park ranger

July 2008–June 2009

Ornithological surveys & public relation including giving public tours and seminars.

### **Education**

#### PhD in Environmental Sciences

University of Sussex, UK

Pass without corrections

September 2015– March 2019

Specialising in big data, remote sensing & statistical analyses

#### MSc in Biology

University of Copenhagen, Denmark

12 (A)

2013–2015

Specialisation in Macroecology & African land systems. Four months of self-organised fieldwork in Tanzania and Kenya

#### **BSc** in Biology

University of Marburg, Germany

1.9(A)

2009-2012

Specialising in Conservation ecology. Six months of fieldwork in east Poland.

### Professional skills

Languages: Fluent in German & English, basic literacy in Danish.

**General:** Very good project- and time-management skills. Experienced presentation and talking skills, working well solo or in teams.

**Statistics:** Univariate and multivariate statistics. Time series analyses. Linear optimizations. Good knowledge about applying Bayesian and modern machine learning techniques.

Coding: Proficient in: R, Python, Bash, Javascript, SQL, HTML, CSS, TeX, Learning Julia

Databases: MySQL, PostgreSQL, PostGIS, SQLite, Microsoft Access.

**General computer skills:** Broad Linux & Microsoft Windows knowledge. Most existing GIS software. Comfortable with big data. Cloud computing knowledge (Google Cloud, Google Earth Engine, AWS). Excellent command of Microsoft Office. Server and network administration.

### **Publications**

Publications I have led or been involved in have been cited over **2000** times (h-index: **13**), including in policy documents and assessments, such as *IPBES* and the *GBF*.

### Peer reviewed

- [1] **Jung, M** (2022) Predictability and transferability of local biodiversity environment relationships *PeerJ* 10:e13872 doi:10.7717/peerj.13872
- [2] Chrysafi, A. [...], **Jung, M.** et al. (2022) "Quantifying Earth system interactions for sustainable food production: an expert elicitation" *Nature Sustainability* doi:10.1038/s41893-022-00940-6
- [3] **Jung, M.**, Lewis, M., Lesiv, M., Arnell, A., Fritz, S. & Visconti, P. (2022) "The global exposure of species ranges and protected areas to forest management" *Diversity and Distribution* doi:10.1111/ddi.13582
- [4] Lesiv M., , [...], **Jung M.**, et al. (2022). "Global forest management data for 2015 at a 100 m resolution." *Scientific Data* 9:199. doi:10.1038/s41597-022-01332-3.
- [5] Fritz, S., [...], **Jung, M.**, et al. (2022) "A Continental Assessment of the Drivers of Tropical Deforestation with a Focus on Protected Areas" *Frontiers in Conservation Science* 3:1–12 doi:10.3389/fcosc.2022.830248
- [6] Henry, R.C., Arneth, A., **Jung, M.**, Rabin, S. S., Rounsevell M.D., Warren, F. and Alexander, P. (2022) "Global and regional health and food security in a Half Earth world." *Nature Sustainability* doi:10.1038/s41893-021-00844-x
- [7] **Jung, M.**, [...], Visconti, P., (2021). "Areas of global importance for terrestrial biodiversity, carbon, and water." *Nature Ecology & Evolution*, 5:11, 1499-1509 doi:10.1101/2020.04.16.021444
- [8] Santini, L., Antao, L., **Jung, M.**, Benítez-López, A.,Rapacciuolo, G., Di Marco, M., Jones, F., Haghkerdar, J.M., and González-Suárez M. (2021). "Macroecology and Conservation Biology: links, challenges, and opportunities" *Frontiers in Biogeography* doi:10.21425/F5FBG53025
- [9] Marques, A., Robuchon, M., Hellweg, S., [...], **Jung, M.**, *et al.* (2021) "A research perspective towards a more complete biodiversity footprint: a report from the World Biodiversity Forum." *Int J Life Cycle Assess.* doi:10.1007/s11367-020-01846-1
- [10] **Jung, M.**, Scharlemann, J. P. W. and Rowhani, P. (2020). "Landscape-wide changes in land use and land cover correlate with, but rarely explain local biodiversity change" *Landscape Ecology* 2, doi:10.1007/s10980-020-01109-2

- [11] Leclère, D., [...] **Jung, M.**, *et al.* (2020) "Bending the curve of terrestrial biodiversity needs an integrated strategy." *Nature*. 585, 551-556 doi:10.1038/s41586-020-2705-y
- [12] Jung, M., Raj Dahal, P., Butchart, S. H. M., Donald, P.F., De Lamo, X., Lesiv, M., Kapos, V., Rondinini, C. and Visconti, P. (2020). "A global map of terrestrial habitat types" *Nature - Scientific data* 7(1),256 doi:10.1038/s41597-020-00599-8
- [13] **Jung, M.**, Rowhani, P., and Scharlemann, J. P. W. (2019). "Impacts of past abrupt land change on local biodiversity globally." *Nature Communications*, 10(1), 5474. doi:10.1038/s41467-019-13452-3
- [14] **Jung, M.**, Rowhani, P., Newbold, T., Bentley, L., Purvis, A. and Scharlemann, J. P.W. (2019) "Local species assemblages are influenced more by past than current dissimilarities in photosynthetic activity" *Ecography*, 42(4), 670–682. doi:10.1111/ecog.04031
- [15] Kehoe, L., [...], **Jung, M.**, *et al.* (2019) "Make EU trade with Brazil sustainable" *Science*, 364(6438):341 doi:10.1126/science.aaw8276
- [16] Norfolk, O., **Jung, M.**, Platts, P. J., Malaki, P., Odeny, D., and Marchant, R. (2017) "Birds in the matrix: the role of agriculture in avian conservation in the Taita Hills, Kenya." *African Journal of Ecology*, doi:10.1111/aje.12383
- [17] **Jung, M.**, Hill, S. L. L., Platts, P. J., Marchant, R., Siebert, S., Fournier, A., Munyekenye, F. B., Purvis, A., Burgess, N. D. and Newbold, T. (2017) "Local factors mediate the response of biodiversity to land use on two African mountains." *Animal Conservation*, doi:10.1111/acv.12327
- [18] Hudson, L., [...], **Jung, M.** *et al.* (2017) "The database of the PREDICTS (Projecting Responses of Ecological Diversity In Changing Terrestrial Systems) project." *Ecology and Evolution*, 7(1), 145-188. doi:10.1002/ece3.2579
- [19] Newbold, T., [...], **Jung, M.** *et al.* (2016) "Has land use pushed terrestrial biodiversity beyond the planetary boundary? A global assessment." *Science*, 353(6296):288-291 doi:10.1126/science.aaf2201
- [20] Martin, P.A., **Jung**, **M.**, Brearley, F.Q., Ribbons, R.R., Lines, E.R. and Jacob, A.L. (2016) "Can we set a global threshold age to define mature forests?" *PeerJ*, e1595 doi:10.7717/peerj.1595
- [21] **Jung, M.** (2015) "LecoS A python plugin for automated landscape ecology analysis." *Ecological Informatics* 31: 18-21 doi:10.1016/j.ecoinf.2015.11.006
- [22] Hudson, L., [...], **Jung, M.** *et al.* (2014) "The PREDICTS database: a global database of how local terrestrial biodiversity responds to human impacts" *Ecology and Evolution*; 4(24):4701-4735 doi:10.1002/ece3.1303

#### Submitted or in review

- [23] Gaget, E, **Jung**, **M**, Lewis, M, Hofhansl, F, Graham, L, Warren-Thomas, E, Visconti, P (in review) "Best practices in biodiversity modelling in the context of land-use, a systematic review" *Global Ecology and Biogeography*
- [24] Victor, C, Santini, L, Lucas, P., Gonzalez, M., Hoffmann, M., Benítez-López, A., Pacifici, M., Schipper, A., Bohm, M., Zizka, A., Clausnitzer, V, Meyer, C., **Jung, M.**, Butchart, S., Cardoso, P., Mancini, G., Akcakaya, R., Young, B, Patoine, G. and Di Marco, M. (in review) "Prioritizing the reassessment of Data Deficient species in the Red List" *Conservation Biology*

- [25] **Jung, M.**, Boucher, T., Wood, S.A., Folberth, C., Wironen, M., Thornton, P., Bossio, D. and Obersteiner M. (In review) "A global clustering of terrestrial food production systems" *One Earth* doi:10.31219/osf.io/puyzw
- [26] **Jung, M**, Lesiv, M., Warren-Thomas, E., Schepaschenko, D., See, L., Fritz, S. (in review) "The importance of capturing management in forest restoration targets" *Nature Sustainability*
- [27] Monjeau, A., [...], **Jung, M.** *et al.* (prep for revision) "Joint prioritisation of biodiversity conservation, ecosystem services supply and food production in Argentina" *Science Advances*
- [28] Fastre, C., Mogg, S., **Jung, M.**, and Visconti, P. (prep for revision). "Targeted expansion of Protected Areas to maximise the persistence of terrestrial mammals." doi:10.1101/608992v2

### Policy briefs, Reports and grey literature

- Kapos, V, Telhado, C., Tshwene-Mauchaza, B., Mills, J., L., **Jung, M.**, Lewis, M., Visconti, P., Iribarrem, A., Ribeiro Lacerda, E., Ribeiro Mortara, S., Silva de Oliveira, L.G., Souza Bezerra Rocha, D., Toledo Capellao, R., Strassburg, B., Miles, L. (2022). Strengthening Synergies: Climate change mitigation benefits from achieving global biodiversity targets. UNEP-WCMC, Cambridge. <u>URL</u>
- Miles, L., Visconti, P., Strassburg, B., **Jung, M.**, Lewis, M., Iribarrem, A., Ribeiro Lacerda, E., Ribeiro Mortara, S., Silva de Oliveira, L.G., Souza Bezerra Rocha, D., Toledo Capellao, R., Mills, J., Telhado, C., Tshwene-Mauchaza, B., Kapos, V. (2021). Methods for estimating potential greenhouse gas emissions reductions from achieving global biodiversity targets. UNEP-WCMC, Cambridge Report to UK DEFRA.
- Bossio D., Obersteiner M., Wironen M., **Jung M.**, Wood S., Folberth C., Boucher T., Alleway H., Simons R., Bucien K., Dowell L., Cleary D., Jones., R. (2021) Foodscapes: Toward Food System Transition, The Nature Conservancy, International Institute for Applied Systems Analysis, and SYTEMIQ, ISBN: 978-0-578-31122-7
- De Lamo, X., **Jung, M**, Visconti, P., Schmidt-Traub, G., Miles, L. and Kapos, V. (2020) "Strengthening synergies: how action to achieve post-2020 global biodiversity conservation targets can contribute to mitigating climate change" UNEP-WCMC, Cambridge, UK
- Waldron, A., [...], **Jung, M.**, *et al.* (2020) Protecting 30% of the planet for nature: costs, benefits and economic implications *Working paper for the post-2020 Global Biodiversity Framework* Protecting 30% of the planet for nature: costs, benefits and economic implications
- Jung, M., Visconti, P., De Lamo, X., Tallowin, O. and Mark, J. (2020) How we save the World
  Protection Priorities National Geographic Magazine, Issue 4 Earth Day 50th Anniversary
  special issue Online
- **Jung, M.** (2012) "The U.S.-Investors and African palm oil, Report for the SAVE Wildlife Conservation Fund

### **Presentations**

# Talks.....

[1] **Jung, M.**, Alagador, Chapman, M., Kujala, H., O'Connor, Schinegger, R., Verburg, P. Visconti, P.(2022) "Planning where and how to best conserve and restore European biodiversity" *BES* 2022

- [2] **Jung, M** (2022) "Integrated modelling and planning for restoring European landscapes". Invited speaker to the 2022 BIOCHANGE symposium in Aarhus.
- [3] Fernandez, N., Visconti, P., **Jung, M.**, Pereira, H. (2022) "NaturaConnect Mobilizing stake-holders and biodiversity data to design the Trans-European Nature Network." at *ECCB* 2022, *Prague*
- [4] **Jung, M.**, Chapman, M, Lewis, M. and Visconti, P, (2022) "European conservation and restoration options under future land-use scenarios" **Contributed talk to organised symposium** 'Planning where and how to best conserve and restore biodiversity' at ECCB 2022, Prague.
- [5] Chapman, M., Jung, M., Leclere, D. and Visconti, P. (2022) "Assessing EU policies for nature and climate: the BIOCLIMA project" *World Biodiversity Forum* 2022, *Davos*
- [6] Henry, R.C., Alexander, P., Arneth, A., Warren, F., Rounsevell, M.D., **Jung, M.** and Rabin, S. S. (2022) "Global and regional health and food security in a Half Earth world." *World Biodiversity Forum* 2022, *Davos*
- [7] **Jung, M.** "Integration as guiding principle in conservation planning and ecological modelling" (2022) *Invited research seminar at the University of Vienna CVL*
- [8] **Jung, M.** "Areas of Global Importance for Biodiversity, Carbon and Water", (2022) *Invited speaker* to IIASA CDAT seminar series
- [9] **Jung, M.** "Biodiversitäts und Naturschutz forschung am IIASA" Keynote speaker at the *Laxenburg Klimatag*. Link to News announcement
- [10] **Jung, M.** and Visconti P. (2020) "Global Areas Of Importance For Species Conservation And Carbon Storage", *World Biodiversity Forum*, February 23-28, Davos, Switzerland.
- [11] **Jung, M.** and Visconti P. (2019) "Identifying global terrestrial areas of biodiversity significance", *UNEP-WCMC Gaining consensus on biodiversity assessments workshop*, May 20-24, Cambridge, UK.
- [12] **Jung, M.**, Rowhani, P. and Scharlemann, J. (2018) "Using remote sensing to assess biotic lag in species assemblages globally", *British Ecological Society Annual Meeting*, December 17-19, Birmingham, UK.
- [13] **Jung, M.** (2018) "Linking local biodiversity change and landscape-wide land changes", *Macroe-cology SIG: Annual Meeting* 2018 British Ecological Society, July 10-11, St. Andrews, UK.
- [14] **Jung, M.** (2017) "The lasting impact of past major disturbances on biodiversity", *Macroecology SIG: Annual Meeting* 2017 *British Ecological Society*, July 5-7, London, UK.
- [15] **Jung, M.** (2016) "The local and African-wide distinctiveness of agroforestry for biodiversity", *Evolution, behaviour and environment seminar series*, October 27, Sussex, UK.
- [16] **Jung, M.** (2016) "Influence of land dynamics on biodiversity", *Evolution, behaviour and environment seminar series*, April 30, Sussex, UK.
- [17] **Jung, M.**, Newbold, T. and Burgess N.D. (2014) "African species' response to land-use change. Assessing the match between an Africa-wide model and fine-scale field data", 7th Early Career Research meeting of the Tropical Ecology Group British Ecological Society, August 14- 15, York, UK.

Posters.....

[18] Visconti, P., **Jung, M.**, Beher, J., Osti, M., Fernandez, N., Pereira, H., & Fernandez, M. (2022). "Designing a resilient and coherent Trans-European conservation Network for Nature and People". *Systems Analysis for Reducing Footprints and Enhancing Resilience*, 16-17 November, 2022, Vienna, Austria. <u>Download</u>

- [19] **Jung, M.** (2022) "ibis.iSDM A modelling framework for integrated species distribution models", *European Conference for Conservation Biology (ECCB)*, August 22-26, Prague, Czechia, Download link
- [20] Jung, M., Raj Daha, P., Butchart, Donald, P.F., Rondini, C. and Visconti, P. (2020) "A Global Map Of Species Terrestrial Habitat Types", World Biodiversity Forum, February 23-28, Davos, Switzerland <u>Download</u>
- [21] **Jung, M.**, Rowhani, P. and Scharlemann, J. (2017) "Abrupt land change events alter biodiversity", *University of Sussex Annual research symposium*, December 14- 15, Sussex, UK. **Best poster prize** <u>Download</u>
- [22] **Jung, M.**, Rowhani, P. and Scharlemann, J. (2016) "Lasting influences of past land-surface conditions on species assemblages", *British Ecological Society Annual Meeting*, December 11-14, Liverpool, UK. **Highly commended** <u>Download</u>
- [23] **Jung, M.**, Burgess, N.D. and Newbold, T. (2016) "A comparison of broad-scale model estimates with independent bird data from East-Africa", *Student Conference on Conservation Science*, March 22-24, Cambridge, UK. <u>Download</u>
- [24] **Jung, M.**, Newbold, T. and Burgess, N.D. (2014) "African species' response to land-use change. Assessing the match between an Africa-wide model and fine-scale field data", 7th Early Career Research meeting of the Tropical Ecology Group British Ecological Society, August 14- 15, York, UK. <u>Download</u>
- [25] Linder J.M., Gorschlüter L., Altherr, S., Waltert, M., **Jung, M.** (*not on abstract*), Chapple, A. and Astaras C. (2012) "The anatomy of an oil palm plantation and why African primate diversity is in trouble", 2012 Annual Meeting of the American Association of Physical Anthropologists, April 11- 14, Portland, Oregon.

# Developed software and data

- **Jung, M.** (2022). ibis.iSDM: Modelling framework for Integrated Biodiversity distribution scenarios. R package version 0.1, <u>Code</u>
- **Jung, M.** (2020). A layer of global potential habitats (Version 004) [Data set]. Zenodo. doi:10.5281/zenodo.4038749
- Tomislav, H., **Jung, M.** and Visconti, P. (2020) Potential distribution of land cover classes (Potential Natural Vegetation) at 250 m spatial resolution (Version v0.1) Zenodo. doi:10.5281/zenodo.3631254
- Jung, M. (2017) Global forest fragmentation data based on ALOS PALSAR data <u>Download</u>
- **Jung, M.** (2016). LecoS A python plugin for automated landscape ecology analysis. Ecological Informatics, 31, 18–21. doi:10.1016/j.ecoinf.2015.11.006. Code

**Jung, M.** (2014) "QSDM Species distribution modelling support for the QGIS Processing toolbox", Download

### **Academic service**

- 2022 present IPBES Fellow contributing to the IPBES Nexus assessment.
- 2019 present **Associate Editor** for Diversity and Distributions.

Scientific Reviewer for Ecology, Environmental Science and Remote Sensing journals, including *Science, Nature Communications, Global Change Biology, PLOS Biology, Conservation biology, Ecological Informatics* and many others. See **here** for (incomplete) list.

# Supervision and teaching experience

# Supervision

- 2022-26 Julia Hackländer, PhD student at the Wageningen university, Netherlands. Acting co-supervisor.
- 2022-26 Leonie Jonas, PhD student at the University of Turku, Finland. Acting co-supervisor.
- 2022 Millie Chapman, PhD student from the University of California, Berkeley, Co-supervisor as part of the YSSP 2022 cohort.
- 2021 Peta Brom, PhD student from the University of Cape Town (UCT), Co-supervisor as part of the YSSP 2021 cohort.
- 2021 Valentina Marconi, PhD student from the Zoological Society of London (ZSL), Primary supervisor as part of the YSSP 2021 cohort.

# Teaching.....

- 2018 QGIS workshop for postgraduates University of Sussex, UK
- 2018 Introduction to Geographical Information systems University of Sussex, UK
- 2017 Tutor on R course for PhD, MSc and BSc students R4ALL, UK
- 2016-19 Introduction to Ecology and Conservation University of Sussex, UK
- 2015 Tutoring on Workshop "Landscape Ecology analysis in QGIS" University of Lund, Sweden
- 2014 Workshop "Vegetation from space and from the ground" African Insect Science for Food and Health (ICIPE), Kenya
- 2013 Workshop "Landscape Ecology analysis in QGIS" University of Lund, Sweden

# Scientific workshops and training courses

2022-23 - Participation in expert sDIV synthesis workshop *sREDLIST* at iDIV with the goal of exploring ways to automatise species extinction risk assessments.

- 2017 Two weeks summer school on synthesising and modelling biodiversity data iDiv, Germany
- 2016 Multiple training courses on academic writing, teaching and entrepreneurial thinking and policy impact University of Sussex Doctoral school, UK

# Successful raised funding

Totally raised funding for me or people working with me: 3 373 631 €

- 2022 Acting Principal Investigator on the Biodiversa+ funded "INtegrated Spatial PlannIng across REalms (INSPIRE)" project. Volume: 221 000 € (Total: 1 000 000 €)
- 2022 Co-applicant Horizon Europe tender for "Supporting the development of a coherent and resilient Trans-European Nature Network" (NaturaConnect) Volume: 1 513 750 € (Total: 10 000 000 €)
- 2021 Supervisory team member (Main recipient: Elie Gaget) of Kone Foundation grant for a PhD scholarship in "Climate warming adaptation for bird conservation" (Total: 167 200 €)
- 2021 Biodiversity modelling contributor to the "Streamlining participatory approaches and agent-based models to explore ideas of fairness at the food-water-biodiversity (FWB) nexus (Acronym: fairSTREAM)" Volume: 390 000 €
- 2020 Co-applicant and thematic expert on Biodiversity modelling on EU-Tender "European Union BIOdiversity and CLIMate strategies Assessment (Acronym: EU-BIOCLIMA)" 1 000 000 €
- 2018 Doctoral festival runner up research image prize in the category science. Volume: 120 £ (140 €)
- 2015 University of Sussex Researcher led initiative fund for setting up a quantitative analysis group Volume: 1000 £ (1416 €)
- 2015-2019 University of Sussex School of life sciences PhD funding grant Volume: 14.057 £ (19910 €) annually
- 2014 DANIDA Travel Grant (No. A26811) in support of conducting fieldwork in Kenya and Tanzania Volume: 13000 DKK (1700 €)
- 2013-2014 Monthly scholarship from the Danish ministry of Higher Education and Science Volume: 5753 DKK (770 €) monthly
- 2013 Grant to extent the functionality of my QGIS plugin LecoS from the Universidade de Évora, Departamento de Biologia, Unidade de Biologia da Conservação Volume: 250 €

## **Professional References**

Available on request