

# Maximilian H.K. Hesselbarth *(he/him)*

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## Professional Appointments

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Statistics Austria	Vienna, Austria
Spatial Statistics, Energy and Environment	2025/03/01 - ongoing
International Institute for Applied Systems Analysis (IIASA)	Laxenburg, Austria
Research Scholar; Biodiversity, Ecology, and Conservation Group	2023/02/15 - 2025/02/14
University of Michigan	Ann Arbor, USA
Postdoctoral Fellow; Coastal Ecology and Conservation Lab	2020/08/01 - 2022/12/31

## Education

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University of Goettingen	Goettingen, Germany
Dr. rer. nat; Department of Ecosystem Modelling	2016/10/01 - 2020/04/06
University of Goettingen	Goettingen, Germany
Master of Science; Ecosystem Analysis and Modelling	2014/10/01 - 2016/11/15
University of Applied Sciences and Arts	Goettingen, Germany
Bachelor of Science; Forestry	2011/10/01 - 2014/07/07

## Internships / Research visits

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Iowa State University	Ames, USA
Department of Ecology, Evolution and Organismal Biology	2017/10/18 - 2017/12/21
University of KwaZulu-Natal	Pietermaritzburg, South Africa
School of Life Sciences	2016/03/07 - 2016/08/01
North-West University	Potchefstroom, South Africa
Land Degradation and Restoration Ecology	2016/03/07 - 2016/08/01
Northwest German Forestry Research Institute	Goettingen, Germany
Department of Growth Modelling	2015/09/01 - 2015/10/01
SilvaTerra Ltd.	Lilongwe, Malawi
Forest Consulting and Research	2013/11/04 - 2014/03/30
Wise Batten Inc.	Estill, USA
Forestry Services and Wildlife Management	2011/06/02 - 2011/08/01
State Forestry	Meßstetten, Germany
Department Heuberg	2010/08/02 - 2010/08/27
State Forestry	Meßstetten, Germany
Department Heuberg	2009/08/31 - 2009/09/11

## Publications

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Publications and presentations are available on my homepage.

† Authors contributed equally.

### Articles

- Nowosad, J., Hesselbarth, M.H.K. (2026). *The landscapemetrics and motif Packages for Measuring Landscape Patterns and Processes*. In: Rocchini, D. (eds) R Coding for Ecology. Use R!. Springer, Cham. [https://doi.org/10.1007/978-3-031-99665-8\\_10](https://doi.org/10.1007/978-3-031-99665-8_10).
- Hesselbarth, M.H.K., Nowosad, J., de Flamingh, A., Simpkins, C.E., Jung, M., Gerber, G., Bosch, M. (2025). *Computational methods in landscape ecology*. Current Landscape Ecology Reports 10, 2. <https://doi.org/10.1007/s40823-024-00104-6>
- Hesselbarth, M.H.K. †, Allgeier, J.E. † (2024). *High fish biomass and low nutrient enrichment synergistically enhance stability in a seagrass meta-ecosystem*. Conservation Letters. e13071. <https://doi.org/10.1111/conl.13071>
- Munsterman, K.S., Hesselbarth, M.H.K., Allgeier, J.E. (2024). *Smaller and bolder fish enhance ecosystem-scale primary production around artificial reefs in seagrass beds*. Ecological Applications. e3055. <https://doi.org/10.1002/eap.3055>
- Nowosad, J., Hesselbarth, M.H.K. (2024). *The landscapemetrics and motif packages for measuring landscape patterns and processes*. arxiv, stat.ME. <https://doi.org/10.48550/arxiv.2405.06559>
- Hesselbarth, M.H.K., Wiegand, K. (2024). *A simulation study comparing common methods for analyzing species-habitat associations of plants*. Journal of Vegetation Science 35, e13243. <https://doi.org/10.1111/jvs.13243>
- Shayka, B.F., Hesselbarth, M.H.K., Schill, S.R., Currie, W.S., Allgeier, J.E. (2023). *The natural capital of seagrass beds in the Caribbean: evaluating their ecosystem services and blue carbon trade potential*. Biology Letters 19:20230075. <https://doi.org/10.1098/rsbl.2023.0075>
- Rubio-Camacho, E.A., Hesselbarth, M.H.K., Flores-Garnica, J.-G., Acosta-Mireles, M. (2023). *Tree mortality in mature temperate forests of central Mexico: A spatial approach*. European Journal of Forest Research 142, 565–577. <https://doi.org/10.1007/s10342-023-01542-3>
- Simpkins, C.E., Hanss, S., Spangenberg, M.C., Salecker, J., Hesselbarth, M.H.K., Wiegand, K. (2022). *spectre: An R package to estimate spatially-explicit community composition using sparse data*. Ecography 2022 (12), e06272 <https://doi.org/10.1111/ecog.06272>
- Esquivel, K.E. †, Hesselbarth, M.H.K. †, Allgeier, J.E. (2022). *Mechanistic support for increased primary production around artificial reefs*. Ecological Applications 32 (6), e2617. <https://doi.org/10.1002/eap.2617>
- Hesselbarth, M.H.K. (2021). *shar: An R package to analyze species-habitat associations using point pattern analysis*. Journal of Open Source Software 6 (68), 3811. <https://doi.org/10.21105/joss.03811>
- Hesselbarth, M.H.K., Nowosad, J., Signer, J., Graham, L.J. (2021). *Open-source tools in R for landscape ecology*. Current Landscape Ecology Reports 6 (3), 97-111. <https://doi.org/10.1007/s40823-021-00067-y>
- Borthwick, R. †, de Flamingh, A. †, Hesselbarth, M.H.K. †, Parandhaman, A. †, Wagner, H.H., Abdel Moniem, H.E.M. (2020). *Alternative Quantifications of Landscape Complementarity to Model Gene Flow in Banded Longhorn Beetles [Typocerus v. velutinus (Olivier)]*. Frontiers in Genetics 11, 307. <https://doi.org/10.3389/fgene.2020.00307>
- Hesselbarth, M.H.K., Sciaini, M., With, K.A., Wiegand, K., Nowosad, J. (2019). *landscapemetrics: An open-source R tool to calculate landscape metrics*. Ecography 42 (10), 1648-1657. <https://doi.org/10.1111/ecog.04617>

Hesselbarth, M.H.K., Wiegand, K., Dreber, N., Kellner, K., Esser, D., Tsvuura, Z. (2018). *Density-dependent spatial patterning of woody plants differs between a semi-arid and a mesic savanna in South Africa*. Journal of Arid Environments 157, 103-112. <https://doi.org/10.1016/j.jaridenv.2018.06.002>

## Selected presentations

Hesselbarth, M.H.K., Jung, M., Visconti, P. (2024). *Forest biodiversity under changing climate and forest structure*. 2nd ForestNavigator Stakeholder Workshop. Brussels (Belgium).

Hesselbarth, M.H.K., Jung, M., Visconti, P. (2023). *Evaluating the impact of European forest management on forest-related species using iSDMs*. 52nd Annual Meeting of the Ecological Society of Germany, Austria and Switzerland. Leipzig (Germany).

Hesselbarth, M.H.K., Jung, M., Visconti, P. (2023). *Biodiversity indicators and species distribution modeling*. 1st ForestNavigator Stakeholder Workshop. Laxenburg (Austria).

Hesselbarth, M.H.K., Munsterman, K.S. (2022). *Advanced R Workshop*. Ecology and Evolutionary Biology Department, University of Michigan. Ann Arbor (USA). Workshop.

Hesselbarth, M.H.K. (2022). *Artificial reefs to promote primary production in tropical seagrass ecosystems: A simulation study using individual-based modelling*. Ecology and Evolutionary Biology Department Seminar, University of Michigan. Ann Arbor (USA). Talk.

Hesselbarth, M.H.K. (2022). *Introduction to R Workshop*. Ecology and Evolutionary Biology Department, University of Michigan. Ann Arbor (USA). Workshop.

Hesselbarth, M.H.K. (2021). *Spatial patterns in ecology and what we (hopefully) can learn from them*. Ecology and Evolutionary Biology Department Seminar, University of Michigan. Ann Arbor (USA). Talk.

Nowosad, J., Hesselbarth, M.H.K. (2020). *Introduction to landscape ecology with R*. Annual Meeting International Association of Landscape Ecology North America. Toronto (Canada). Workshop.

Hesselbarth, M.H.K., Getzin, S., Ortega, J., Wiegand, K. (2020). *Spatial statistics*. Courses on spatial point pattern analysis for Master's and PhD students. Göttingen (Germany). Workshop.

Hesselbarth, M.H.K., Sciaini, M., Nowosad, J., Hanss, S. (2019). *landscapemetrics: Introducing a new R tool to characterize landscapes*. 10th World Congress International Association of Landscape Ecology. Milano (Italy). Conference poster.

Hesselbarth, M.H.K., Wiegand K. (2018). *A simulation study comparing methods to analyze species-habitat associations of forest trees*. 48th Annual Meeting of the Ecological Society of Germany, Austria and Switzerland. Vienna (Austria). Conference poster.

## Software

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**landscapemetrics** Landscape Metrics for Categorical Map Patterns.

**shar** Species-Habitat Associations in R.

**onpoint** Helper Functions related to Point Pattern Analysis.

## Peer reviewer scientific journals

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Aquatic Conservation; Ecological Indicators; Global Ecology and Biogeography; Journal of Animal Ecology; Journal of Open Source Software; Journal of Tropical Ecology; Journal of Vegetation Science; Landscape Ecology; Methods in Ecology and Evolution; PeerJ; Perspective in Plant Ecology, Evolution and Systematics; Plant and Soil; Plant Ecology; PLOS One; Restoration Ecology; Scientific Reports; Web Ecology

## Skills

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R: ●●●●●

C++: ●●●○○

NetLogo: ●●○○○

HTML, CSS: ●○○○○

SQL/SQLite: ●○○○○

LaTeX: ●●●○○

git: ●●●○○

QGIS: ●●○○○