

# Maximilian H.K. Hesselbarth

Research Scholar

Biodiversity, Ecology, and Conservation Group | International Institute for Applied Systems Analysis (IIASA)

✉ mhk.hesselbarth@gmail.com 🏠 www.maxhesselbarth.com 🌐 mhesselbarth 🆔 0000-0003-1125-9918

## Professional Appointments

International Institute for Applied Systems Analysis (IIASA)

Laxenburg, Austria

Research Scholar; Biodiversity, Ecology, and Conservation Group

2023/02/15 - ongoing

University of Michigan

Ann Arbor, USA

Postdoctoral Fellow; Coastal Ecology and Conservation Lab

2020/08/01 - 2022/12/31

## Education

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 Sciences; Ecosystem Analysis and Modelling

2014/10/01 - 2016/11/15

University of Applied Sciences and Arts

Goettingen, Germany

Bachelor of Sciences; Forestry

2011/10/01 - 2014/07/07

## Internships / Research visits

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 Modeling

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 Department Heuberg

Messtetten, Germany

Forest Management

2010/08/02 - 2010/08/27

State Forestry Department Heuberg

Messtetten, Germany

## Conferences / Workshops (attended)

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World Congress International Association of Landscape Ecology	Milano, Italy
	2019/07/01 - 2019/07/05
Annual Meeting of the Ecological Society of Germany, Austria and Switzerland	Vienna, Austria
	2018/09/10 - 2018/09/14
Spatial Modelling <i>inlabru</i>	St. Andrews, UK
	2018/03/26 - 2018/03/30
Deep Learning with <i>Keras</i> and <i>TensorFlow</i>	Solingen, Germany
	2018/01/18 - 2018/01/19
Young Modellers in Ecology	Freiburg, Germany
	2017/04/29 - 2017/05/05
Advances in Spatial Analysis of Multivariate Ecological Data	Port Talbot, UK
	2017/04/02 - 2017/04/07
Fire Protection and Management	Prodromos, Cyprus
	2013/09/07 - 2013/09/22

## Publications

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Copies of all publications and talks can be found on my homepage

† Authors contributed equally \* Author sequence is alphabetical

### Articles

- 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. In press. <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, 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, 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, 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, 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., 2020. *Analysing and modelling spatial patterns to infer the influence of environmental heterogeneity using point pattern analysis, individual-based simulation modelling and landscape metrics* (Dissertation). University of Goettingen, Goettingen, Germany. <http://dx.doi.org/10.53846/goediss-7959>
- 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, 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>

## Talks/Workshops/Poster

- 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., 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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**arrR** Simulating artificial reefs in R

[Link to homepage](#)

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

[Link to homepage](#)

**shar** Species-Habitat Associations.

[Link to homepage](#)

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

[Link to homepage](#)

## Peer reviewer for scientific journals

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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; Restoration Ecology; Scientific Reports; Synthesis Centre for Biodiversity Sciences; Web Ecology

## Skills

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Languages: German (native), English (fluent)

R: ●●●●●

C++: ●●●○○

NetLogo: ●●○○○

html, CSS: ●○○○○

SQL/SQLite: ●○○○○

LaTeX: ●●●○○

git: ●●●○○

QGIS: ●●○○○