

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

Research Scholar

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

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## Professional Appointments

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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

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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 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

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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 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
Forest Management	2009/08/31 - 2009/09/11

## Conferences / Workshops (attended)

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52nd Annual Meeting of the Ecological Society of Germany, Austria and Switzerland	Leipzig, Germany 2023/09/12 - 2023/09/16
World Congress International Association of Landscape Ecology	Milano, Italy 2019/07/01 - 2019/07/05
48th 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

- 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., 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 (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>

## Presentations

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*. Forest-Navigator stakeholder workshop. International Institute for Applied Systems Analysis. 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., 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: ●●○○○