Maximilian H.K. Hesselbarth

Research Scholar

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

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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 Managment — *2010/08/02 - 2010/08/27*

State Forestry Department Heuberg — Messtetten, Germany

Conferences / Workshops (attended)

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 *inlabru*   St. Andrews, UK
                                                                 2018/03/26 - 2018/03/30

Deep Learning with *Keras* and *TensorFlow*   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

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. In press.

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 Complementation 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`

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

`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

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

Languages: German (native), English (fluent)

| R: ●●●●● | C++: ●●●○○ | NetLogo: ●●○○○ | html, CSS: ●○○○○ |
| SQL/SQLite: ●○○○○ | LaTeX: ●●●○○ | git: ●●●○○ | QGIS: ●●○○○ |