

Dr. Christine I. B. Wallis

Curriculum Vitae

EDUCATION

- 2018 **PhD** in Geography, Philipps-Universität Marburg, Marburg, Germany
Title: Modeling tropical montane biodiversity – the potential of multispectral remote sensing
- 2013 **M.S.c.** in Physical Geography of Human Environmental Systems, Humboldt-Universität zu Berlin, Berlin, Germany
Thesis: Mining urban data: Exploring neighborhood characteristics and health-related patterns in Berlin, Germany
- 2011 **B.S.c.** in Physical Geography, Philipps-Universität Marburg, Marburg, Germany
Thesis: Retrospective land cover classification of northern South America using AVHRR data – a classification tree approach

POSITIONS

- Since 2023 **Postdoctoral researcher**, Geoinformation in Environmental Planning (Prof. B. Kleinschmit), Technische Universität Berlin, Germany
Project: Evaluation of recent remote sensing-based sensors and methods for the quality analysis of NATURA 2000 grassland habitat types (SensGrün)
- 2023 **Guest research stay** at the laboratory for vegetation, Institute of Geography and Geoecology (Prof. S. Schmidlein), Karlsruhe Institute of Technology (KIT), Germany
- 2020-2023 **Postdoctoral researcher**, Laboratory for ecology (Prof. M. Vellend), Université de Sherbrooke, Sherbrooke, Canada
Project: Spectral diversity as an integrator and predictor of community-level taxonomic and functional plant diversity (Canadian Airborne Biodiversity Observatory, CABO)
- 2020 **Scientific researcher in Geography**, laboratory for climatology and remote sensing (Prof. J. Bendix), Philipps-Universität Marburg, Marburg, Germany
Project: Modeling multi-taxa diversity and functions from spatial predictors
- 2020 **Guest research stay** at the Helmholtz-Centre for Environmental Research (UFZ), Lake research, Magdeburg, Germany
- 2018-2019 **Postdoctoral scholarship**, laboratory for climatology and remote sensing (Prof. J. Bendix), Philipps-Universität Marburg, Marburg, Germany
Funding: MArburg University Research Academy (MARA), Developing a proposal for a research project and applying for third-party funding: Spatiotemporal patterns of functional leaf traits under climate change in the tropical Andes
- 2014-2018 **Scientific researcher**, laboratory for climatology and remote sensing (Prof. J. Bendix), Philipps-Universität Marburg, Marburg, Germany
Project: Remote sensing as a surrogate for biodiversity and functional processes along land-use and elevation gradients

PUBLICATIONS

Articles

Wallis, C.I.B., Holtgrave, A.-K., Prati, D., Foerster, M., Kleinschmit, B. 2024: Modeling grassland parameters with hyperspectral satellite data: comparison of sensors, acquisition times and spectral transformations. (Submitted to International *Journal of Applied Earth Observation and Geoinformation*).

Wallis, C.I.B., Crofts, A. L., Kothari, S., Tougas, G., Arroyo, P., Coops, N.C., Kalacska, M., Laliberté, E., Vellend, M., 2024: Methodological considerations for studying spectral-plant diversity relationships. (Submitted to *Remote Sensing of Environment*).

Tougas, G., **Wallis, C.I.B.**, Laliberté, E., Vellend, M., 2024. Hyperspectral imaging has a limited ability to remotely sense the onset of beech bark disease. (Preprint, submitted to *Remote sensing of Ecology and Conservation*). <https://doi.org/10.1101/2024.09.20.614150>

Wallis, C.I.B., Kothari, S., Jantzen, J.R., Crofts, A.L., St-Jean, S., Inamdar, D., Arroyo-Mora, J.P., Kalacska, M., Bruneau, A., Coops, N.C., Laliberté, E., Vellend, M., 2024. Exploring the spectral variation hypothesis for α - and β -diversity: a comparison of open vegetation and forests. Environ. Res. Lett. 19, 064005. <https://doi.org/10.1088/1748-9326/ad44b1>

Crofts, A., **Wallis, C.I.B.**, St-Jean, S., Demers-Thibeault, S., Inamdar, D., Arroyo, P., Kalacska, M., Laliberté, E., Vellend, M., 2024. Linking aerial hyperspectral data to canopy tree biodiversity: An examination of the spectral variation hypothesis. <https://doi.org/10.1002/ecm.1605>

Miraglio, T., Coops, N.C., **Wallis, C.I.B.**, Crofts, A.L., Kalacska, M., Vellend, M., Serbin, S.P., Arroyo-Mora, J.P., Laliberté, E., 2023. Mapping canopy traits over Québec using airborne and spaceborne imaging spectroscopy. Sci Rep 13, 17179. <https://doi.org/10.1038/s41598-023-44384-0>

Wallis, C.I.B., Crofts, A. L., Inamdar, D., Arroyo, P., Kalacska, M., Laliberté, E., Vellend, M., 2023: Remotely sensed Carbon content: the role of tree composition and tree diversity. Remote Sensing of Environment, Volume 284, 113333. <https://doi.org/10.1016/j.rse.2022.113333>

Wallis, C.I.B., Tiede, Y.C., Beck, E., Böhning-Gaese, K., Brandl, R., Donoso, D.A., Espinosa, C.I., Fries, A., Homeier, J., Inclan, D., Leuschner, C., Maraun, M., Mikolajewski, K., Neuschulz, E.L., Scheu, S., Schleuning, M., Suárez, J.P., Tinoco, B.A., Farwig, N., Bendix, J., 2021. Biodiversity and ecosystem functions depend on environmental conditions and resources rather than the geodiversity of a tropical biodiversity hotspot. Scientific Reports 11, 24530. <https://doi.org/10.1038/s41598-021-03488-1>

Wallis, C.I.B., Homeier, J., Peña, J., Brandl, R., Farwig, N., Bendix, J., 2019: Modeling tropical montane forest biomass, productivity and canopy traits with multispectral remote sensing data, Remote Sensing of Environment, Volume 225, 77-92. <https://doi.org/10.1016/j.rse.2019.02.021>

Wallis, C.I.B., Brehm, G., Donoso, D.A., Fiedler, K., Homeier, J., Paulsch, D., Süßenbach, D., Tiede, Y., Brandl, R., Farwig, N., Bendix, J., 2017. Remote sensing improves prediction of

tropical montane species diversity, but performance differs among taxa. Ecological Indicators 83, 538–549. <https://doi.org/10.1016/j.ecolind.2017.01.022>

Tiede, Y., Schlautmann, J., Donoso, D.A., **Wallis, C.I.B.**, Bendix, J., Brandl, R., Farwig, N., 2017. Ants as indicators of environmental change and ecosystem processes. Ecological Indicators 83, 527–537. <https://doi.org/10.1016/j.ecolind.2017.01.029>

Wallis, C.I.B., Paulsch, D., Zeilinger, J., Silva, B., Curatola Fernández, G.F., Brandl, R., Farwig, N., Bendix, J., 2016. Contrasting performance of Lidar and optical texture models in predicting avian diversity in a tropical mountain forest. Remote Sensing of Environment 174, 223–232. <https://doi.org/10.1016/j.rse.2015.12.019>

Book chapters

Tiede, Y., **Wallis, C. I. B.**, Bendix, J., Brandl, R. et Farwig, N. (2017): Chapter 2.3: Ants and Artificial Caterpillars as Indicators of Environmental Change and Ecosystem Processes. In: Beck, E., Knoke, T., Farwig, N., Breuer, L., Siddons, D., Bendix, J. (eds.): Landscape Restoration, Sustainable Use and Cross-scale Monitoring of Biodiversity and Ecosystem Functions. NCI Loja, pp. 81-91. doi: <http://dx.doi.org/10.5678/lcrs/pak823-825.cit.1696>

Wallis, C.I.B., Fiedler, K., Brandl, R., Farwig, N., Bendix, J. (2017): Chapter 2.2: A spatially explicit indicator for species diversity derived from remote sensing in the mountain rainforest of southern Ecuador. In: Beck, E., Knoke, T., Farwig, N., Breuer, L., Siddons, D., Bendix, J. (eds.): Landscape Restoration, Sustainable Use and Cross-scale Monitoring of Biodiversity and Ecosystem Functions. NCI Loja, pp. 67-80. doi: <http://dx.doi.org/10.5678/lcrs/pak823-825.cit.1696>

Tiede, Y., **Wallis, C.I.B.**, Bendix, J., Brandl, R., Farwig, N. (2016): Benefits of Remote Sensing Data for Biodiversity Monitoring Birds, Ants and their Role as Predators. In: Bogner, F. X., Bendix, J., Beck, E. (eds.): Biodiversity Hotspot – Tropical Mountain Rainforest. NCI Loja, pp. 104-108. doi: <http://dx.doi.org/10.5678/lcrs/pak823-825.cit.1513>