CURRICULUM VITAE

CONTACT DETAILS

Name Arildo de Souza Dias

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PERSONAL PROFILE

I am an experienced ecologist with a background in the academic and green tech sectors. I am interested in leveraging nature-based solutions (NbS) and technological innovations for conservation and monitoring biodiversity to enhance the resilience of communities in a changing world. I have developed a framework for monitoring and reporting the impact and dependencies on the nature of companies and portfolios (natural capital accounting). I use an integrative approach combining skills in data science, statistical modeling, geospatial analysis, and application of remote sensing data to model and predict biodiversity and ecosystem services. I am committed to fostering diversity and inclusion, specifically focused on underrepresented minorities.

EDUCATION HISTORY

2009 – 2013 Ph.D. in Plant Science
Campinas State University (Unicamp), Brazil.
Thesis: Leaf traits and xylem anatomy in trees and lianas species in the Brazilian Atlantic Forest.
Supervisor: Prof. Fernando Roberto Martins. Co–supervisor: Prof. Rafael Silva Oliveira.

2006 – 2009 M.Sc. in Plant Science
Campinas State University (Unicamp), Brazil.
Thesis: Architecture, life history and liana infestation of tree species in semideciduous forests from Campinas, SP.
Supervisor: Fernando Roberto Martins.

2000 – 2005 B.Sc in Biology
Federal University of Viçosa (UFV), Brazil.

WORK HISTORY

2024 - Current **Lecture at Sustainability Management School (SUMAS)**

Switzerland

- I am responsible for the course International Business and Biodiversity (OSM452/OMBASM452).

2021 - Current **Senior Scientist & Team Leader /** Single.Earth (SE)

Germany

- Developing a digital twin to assess and monitor biodiversity in nature-based solution (NbS) projects. Results include an approved research proposal, and a manuscript submitted to high impact journal.

- Developing a grant research proposal. Resulted in a grant proposal submitted to the Biodiversa+ 2022 call focusing on the use of Web 3.0 technology (blockchain) to develop a transparent, fair, and democratic database to support climate

2024 - Current **Panel of academic specialists** / The Biodiversity Futures Initiative

Germany

- Work with project developers, private funders, and certification bodies to conduct independent academic peer review of biodiversity credit-generating projects and their claims.

2019 - Current **Research Scholar /** Goethe University

Germany

- Contributing to writing grant proposals, supervising master students, and writing scientific manuscripts.

2017 - 2018 **Research Scholar & Coordinator /** INPA

Brazil

- Coordinator of a sub-project related to forest growth and microclimate monitoring within the Large Biosphere-Atmosphere Experiment in the Amazon Project (LBA). Results include one publication in a high-impact journal, co-supervision of two master students, and two manuscripts in the submission process.

2015 - 2016 **Research Scholar & Coordinator /** INPA

Netherlands

- Producing a meta-analysis to synthesize the status of functional and taxonomic diversity of plant species (lianas) in tropical forests. Results include three manuscripts published and one manuscript under review, all as first author.

2014 - 2016 **Independent Consultant**

Brazil

- Consultant in the field of Forest Ecology and researcher collaborator at the International Institute for Sustainability (IIS) – Rio de Janeiro.
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TEACHING

2024 - Current **Sustainability Management School (SUMAS)**

Swtizerland

- Conducting the course International Business and Biodiversity (OSM452/OMBASM452).

2022 - Current **ODU Initiative**

Brazil

- Conducting remote courses and workshops for training in topics related to data analysis and ecological theory.

2013 - 2014 **Lecturer /Federal University of São Carlos (UFSCAR)**

Brazil

- Developing introductory and advanced courses on Plant Biology (Plant anatomy and morphology, Ex-situ Conservation and Plant Systematics) for undergraduate students (Biology and Forest Engineering). It included developing lectures, study material, and lab practices.

SCIENTIFIC PUBLICATIONS

For my complete list of publications: Scholar Google

Publications :

Arildo S. Dias, R Oliveira, F Martins, F Bongers, N Anten, F Sterck. (2024). Climbing mechanisms as a central trait to understand the ecology of lianas: a global synthesis. *Global Ecology and Biogeography*. https://doi.org/10.1111/geb.13846

Arildo S. Dias, Shaya van Houdt, Katrin Meschin, Katherine von Stackelberg, …, Massimiliano Sanfilippo, Donalda Karnauskaite. (2023). Using Essential Biodiversity Variables to assess forest ecosystem integrity and support climate mitigation actions. *Frontiers in Forests and Global Change*. https://doi.org/10.3389/ffgc.2023.1098901

Ana Carolina Petisco-Souza, Fernanda Thiesen Brum, ..., **Arildo S. Dias**, ..., Márcia C. Marques, Marcos B. Carlucci. Minding the Gap: Range size and economic use drive functional trait data shortfall in the Atlantic Forest (2023). *Biological Conservation*, (238), (https://doi.org/10.1016/j.biocon.2023.110087)

Benjamin S. Halpern, Carl Boettiger, Michael C. Dietze, Jessica A. Gephart, Patrick Gonzalez, …, **Arildo S. Dias**, …, Lucy C. Woodall, Adam S. Wymore, Casey Youngflesh. (2023). Priorities for synthesis research in ecology and environmental science. *Ecosphere* (https://doi.org/10.1002/ecs2.4342).

Wu-Bing Xu, Wen-Yong Guo, Josep M Serra-Diaz, Franziska Schrodt, …, **Arildo S. Dias**, …, Brian J Enquist, Jens-Christian Svenning. (2023). Global beta-diversity of angiosperm trees is shaped by Quaternary climate change. *Science Advances*, 9(14), eadd85553.

Wen-Yong Guo, Josep M Serra-Diaz, Franziska Schrodt, …, **Arildo S. Dias**, …, Brian J Enquist, Jens-Christian Svenning. (2022). Half of the world's tree biodiversity is unprotected and is increasingly threatened by human activities. *Proceedings of the National Academy of Sciences*, 119(25), e2026733119.

Daniel S. Maynard, Lalasia Bialic-Murphy, Constanin M. Zohner, …, **Arildo S. Dias**, …, Jens Kattge, Thomas W. Crowther. (2022). Global trade-offs in tree functional traits. *Nature Communications*, 13(1), 1-12.

Jonas J. Lembrechts, Johan van den Hoogen, Juha Aalto, Michael B. Ashcroft, Pieter De Frenne, …, **Arildo S. Dias**, …, Ivan Nijs, Jonathan Lenoir. (2022). Global maps of soil temperature. *Global Change Biology*, 28(9), 3110-3144.

Oliveira, W., Soares, B. E., Marques, P., Souza, C., **Dias, A. S**., Bello, M., Custódio, L. (2022). Advancing racial equity in Brazil's academia. *Science*, 376(6594), 707-707.

Cristina Baldauf, **Arildo S. Dias**, Christiane E. Corrêa, Flavio A. M. Santos. 2021. Bark harvesting by human population shapes tree allometry in the Brazilian savanna. *Forest Ecology and Management* (https://doi.org/10.1016/j.foreco.2021.119465).

Trevor S Fristoe, Milan Chytrý, Wayne Dawson, Franz Essl, Ruben Heleno, Holger Kreft, …, **Arildo S Dias**, …, Jens-Christian Svenning, Grzegorz Swacha, Fons van der Plas, Kiril Vassilev, and Mark van Kleunen. 2021. Dimensions of invasiveness in Europe's alien flora: links between local abundance, geographic range size and habitat breadth. *Proceeding of the National Academy of Sciences of the United States of America*. (https://doi.org/10.1073/pnas.2021173118)

Grace Jopaul Loubota Panzou, Adeline Fayolle, Tommaso Jucker, Oliver L. Phillips, …, **Arildo S Dias**, …, Yaozhan Xu, Tze Leong Yao and Ted R. Feldpausch. 2020. Pantropical variability in tree crown allometry. *Global Ecology and Biogeography* (https://doi.org/10.1111/geb.13231)

Dias A.S., Oliveira R.S., Martins F.R. 2020. Costs and benefits of air inside wood and its relationship with anatomical traits: a contrast between trees and lianas. *Tree Physiology* (10.1093/treephys/tpaa034).

Kattge, J, Bönisch, G, Díaz, S, Lavorel, S., Prentice, I. C., Leadley, P., **..., Dias, A S**, **…,** and Wirth, C. 2020. TRY plant trait database – enhanced coverage and open access. *Global Change Biology*, 26: 119– 188. **(**https://doi.org/10.1111/gcb.14904)

Dias A.S., Oliveira R.S., Martins F.R., Bongers F., Anten N., Sterck F. 2019. How do trees and lianas adjust their vascular strategy in a seasonal versus rain forest? *Perspectives in Plant Ecology, Evolution and Systematics*, 40, p124465 (https://doi.org/10.1016/j.ppees.2019.125465).

Dias A.S., Santos K., Santos F.M., Martins F.R. 2017. How liana loads alter tree allometry in tropical forests. *Plant Ecology* 218(2): 119–125 (https://doi.org/10.1007/s11258-016-0671-0).

Eisenlohr P. V., Fiuza Melo M. M., Silva M. R., Schmal P., Ferreira-Júnior W. G., **Dias A. S.**, Silva A. F. 2011. Floristic variations in a woody plant community along a trail in a Semideciduous Seasonal Forest, Viçosa, Minas Gerais State, Brazil. *Hoehnea*, 38 (1): 61-71(https://doi.org/10.1590/S2236-89062011000100006)

Ferreira Junior W. G., Silva A. F., Schaefer C. E. G. R., Meira–Neto J. A. A., **Dias A. S.**, Ignacio M., Medeiros M. C. M. P. 2007. Influence of soils and topographic gradients on tree species distribution in a Brazilian Atlantic Tropical Semideciduous Forest. *Edinburgh Journal of Botany* 64(2):1–22 (https://doi.org/10.1017/S0960428607000832)

BOOK CHAPTERS

Dias, A. S.; Sfair, J. C. Associação entre árvores e lianas. In: Berta Lúcia Pereira Villagra; Maria Margarida da Rocha Fiuza de Melo; Sergio Romaniuc Neto; Luiz Mauro Barbosa. (Org.). Diversidade e conservação de trepadeiras: contribuição para a restauração de ecossistemas brasileiros. 1ed. São Paulo, SP: Imprensa Oficial do Estado de São Paulo, 2014, v.1, p. 163–176. ISBN: 978–85–7523–047–3

Rezende, A. A.; **Dias, A. S.**; van Melis, J.; Santos, K. Métodos de amostragem e estudo de caso de lianas: em busca de uma padronização. In: Pedro Vasconcellos Eisenlohr; João Augusto Alves Meira Neto. (Org.). Fitossociologia no Brasil: Métodos e Estudos de Casos, Volume 2 (Editora UFV). ISBN: 978–85–7269–530–5.

RESEARCH GRANTS - FELLOWSHIPS

- sDETERMINE: Determining the direct and indirect effects of mining on ecosystems and biodiversity. (PI) – Our pre-proposal was selected to be submited as full proposal under the 12th call (2024) for Synthesis Projects Groups at German Center for Integrative Biodiversity Research - iDiv (under reveiw).
- Forest-Web3.0: Mobilizing, harmonizing, and incentivizing forest biodiversity and environmental monitoring through Web 3.0 technology. (PI) - Proposal funded by European Union (Biodiversa+ 2022 call). (2024-2027).
- Supported by the National Council for Scientific and Technological Development – Brazil with a Postdoctoral Fellowship at Wageningen University and Research, Netherlands (2015-2016).

- Received research grant from the São Paulo Research Foundation – Brazil (2010 – 2013) (PI).
- Recipient of fellowship by the National Council for Scientific and Technological Development – Brazil (2009 – 2013).
- Recipient of fellowship by the National Council for Scientific and Technological Development – Brazil (2006 – 2009)

ACADEMIC RESPONSABILITIES AND OUTREACH

BES PUBLICATIONS COMMITTEE – I am serving as a member of the British Ecological Society (BES) committee for publications. I am providing support to policy decisions related to the aspects related to the journals of the BES portfolio which includes among others the Journal of Ecology, Functional Ecology, and Methods in Ecology and Evolution.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE (IUCN) – I am serving as a voluntary member of the Commission on Ecosystem Management – Climate Change and Biodiversity Policy thematic group. I am providing support to communication, project development, and technical information (reports and peer-reviewed literature).

COOP4CBD EUROPEAN UNION'S HORIZON EUROPE – The project aims to strengthen the role of the EU in the Convention of Biological Diversity (CBD) and related international agreements. I am one of the coordinators of the expert group on the topic "Indicators for the Monitoring Framework of the Global Biodiversity Framework". We produce information to disseminate to European negotiators to the CBD SBSTTA 25.

I believe open science, reproducibility, and scientific collaboration are essential to advance ecological science and solve the urgent questions demanded by the current climate and biodiversity crises. Therefore, I committed myself to continuously making my research practice open and transparent, and part of this goal has been achieved by being involved in international collaborative projects that share and promote these values such as:

TRY – Plant Trait Database: I am involved as a participant sharing the data related to functional traits of tree species I collected during my PhD.

SoilTemp Database – A global database of soil and near-surface temperatures: I am dataset manager and representant of the Dynamic of Biological Forest Fragments Project (DBFFP) from the National Institute for Research in Amazon – INPA (Brazil) in the SoilTemp Database initiative. We are sharing data from soil temperature and soil moisture collected during one year across forests under different land uses (old growth forests, secondary forests and forests under fragmentation).

DIVERSITY, EQUALITY, AND INCLUSION

As black man from South America, I know from my own experience how difficult is to stay and progress in the scientific career due to the systemic racism. I believe science can have a decisive role against systemic racism, through continuous supporting and facilitating diversity and

inclusion. I am searching to be actively involved in the training and development capacity of the future generation of researchers, with particularly emphasis in supporting diversity and inclusion of minorities historically underrepresented in academia and scientific institutions.

BAME Ecologist Network - I am a member of the BAME Ecologist Network from the British Ecological Society (BES) which aims to support all BAME (Black, Asian, and other Minorities) ecologists from all communities affected by systemic racism providing peer support, advice, and mentoring to BES members and non-members. The group also highlights instances of and works towards, reducing systemic racism, particularly within UK ecology, and promoting a more diverse and inclusive scientific community.

ODU Initiative – I am a founding member and tutor of the Odu initiative to increase black representativeness in academic institutions in Brazil. Odu is a word that means "destiny" or "path" in the Yoruba language. Some traditions recognize 256 Odus of which one is destined to you. This tale has inspired us to recognize that not all paths are easily accessible for Black students. This is especially the case for a career in science, mainly in STEM fields. Most often, Black students have been pushed away from the path of STEM driven by a sense of not belonging. This perception is fueled by microaggressions, tokenism, and other manifestations of systemic racism in academia that isolate Black students. At ODU we provide peer support and role models to inspire Black students to walk the path of science.

COMPUTATIONAL KNOWLEDGE

Programming languages: R, Python

Geospatial and Machine Learning tools - Google Earth Engine (GEE) and R.

Github: https://github.com/arildodias

LANGUAGE PROFICIENCY

Portuguese: native
English: excellent
Spanish: intermediate
German: intermediate

POSTGRADUATE MENTORING

2021	The role of environmental and socioeconomic factors as drivers of land use conversion in the Brazilian biome Caatinga. M.Sc. Thesis. Federal University Rural do Semi-arido, Brazil.
2021	Quantifying the natural capital and agroecological transition and how they influence the livelihood resilience of small farmers in the Brazilian semi-arid region of Caatinga to drought and the Covid-19. M.Sc. Thesis. Federal University Rural do Semi-arido, Brazil.
2019	The role of functional traits and light competition in intra-annual variation of the diameter of eight tree species under the fragmentation effect in the Central Amazon. M.Sc. Thesis. National Institute for Research in Amazon (INPA), Brazil.

2019 Diameter growth patterns in tree communities under different disturbance gradients in the Central Amazon. M.Sc. Thesis. National Institute for Research in Amazon (INPA), Brazil.

2017 Potential distribution of liana species in the Cerrado–Amazon transition: predictive effects of climate change. M.Sc. Thesis. State University of Mato Grosso (UNEMAT), Brazil.

COURSES

2021 Course in Complex Systems Science.
Santa Fe Institute
Santa Fe, USA

2021 Applied Data Science and Machine Learning in Python.
Goethe Research Academy for Early Career Researchers, Goethe University, Frankfurt am Main, Germany

2021 Data Visualization in R.
International Advanced Studies in Demography Research Training Program and the International Max Planck Research School for Population, Health and Data Science, Germany.

2020 Basics of Grant Applications.
Goethe Research Academy for Early Career Researchers, Goethe University, Frankfurt am Main, Germany
Skills and best practices to build a successful grant research application.

2018 Modeling and Numerical Techniques
International Max Planck Research School for Global Biogeochemical Cycles, Jena, Germany
Introduction to Earth system modeling, Global energy balance modelling, Land-atmosphere interactions, Water balance modelling, Complex Systems Concepts

2015 Structural Equation Modelling.
Wageningen University, WUR, Wageningen, Netherlands
Training on R package *lavaan* and how to perform path analysis and structural equation modelling

REFERENCES

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Dr. José Luís Campana Camargo
National Institute for Research in Amazon (INPA), Scientific Coordinator of the Biological Dynamics of Forest Fragments Project (BDFF).
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