




# MAURÍCIO VANCINE







## Doctoral Student in Ecology, Evolution and Biodiversity

I am a Spatial Ecologist and PhD student at Unesp Rio Claro, Brazil. I have experience in landscape ecology, habitat loss and fragmentation, amphibian ecology, species distribution modeling, and analysis of ecological and spatial data.

### EDUCATION

- 2020  
|  
Present
- **São Paulo State University (UNESP)**  
Doctoral Student in Ecology, Evolution and Biodiversity  Rio Claro, SP, Brazil  
**Thesis:** Landscape structure as a predictor of taxonomic and functional diversity of amphibians in the Atlantic Forest **Advisor:** Prof. Milton Cezar Ribeiro
- 2016  
|  
2018
- **São Paulo State University (UNESP)**  
Master in Zoology  Rio Claro, SP, Brazil  
**Thesis:** Diversity, distribution and effect of climate change on Atlantic Forest amphibian communities (UNESP Libraries)  
**Advisor:** Prof. Célio Fernando Baptista Haddad
- 2011  
|  
2014
- **São Paulo State University (UNESP)**  
Bachelor in Ecology  Rio Claro, SP, Brazil  
**Thesis:** Effect of fragmentation on the persistence of anuran amphibians (Amphibia: Anura) within the Atlantic Forest (UNESP Libraries)  
**Advisor:** Prof. Milton Cezar Ribeiro






### COMPLEMENTARY EDUCATION

- 2022
- **Joint Species Distribution Modelling with HMSC**  
University of Jyväskylä (Online)  Jyväskylä, Finlandia  
• 45 h [• course](#)
- 2022
- **Data Science Journey**  
Ômega Data Science (Online)  Curitiba, Paraná  
• 330 h [• course](#)
- 2020
- **Hierarchical Modelling of Species Communities with the R-package Hmsc**  
University of Helsinki (Online)  Helsinki, Finland  
• 25 h [• course](#)
- 2020
- **School on Community Ecology: from patterns to principles**  
São Paulo State University (UNESP)  São Paulo, SP, Brazil  
• 60 h [• course](#)
- 2019
- **Introduction to Hierarchical Modeling**  
Federal University of Rio Grande do Sul (UFRGS)  Porto Alegre, RS, Brazil  
• 45 h [• course](#)
- 2016
- **Geoprocessing with GRASS GIS**  
São Paulo State University (UNESP)  Rio Claro, SP, Brazil  
• 24 h

### CONTACT

 [mauriciovancine.github.io](https://mauriciovancine.github.io)  
 [mauricio.vancine@gmail.com](mailto:mauricio.vancine@gmail.com)  
 [mauriciovancine](https://mauriciovancine)  
 [github/mauriciovancine](https://github.com/mauriciovancine)  
 [0000-0001-9650-7575](https://orcid.org/0000-0001-9650-7575)  
 [9761288418931193](tel:9761288418931193)

### THEMES

 Spatial Ecology  
 Landscape Ecology  
 Ecological Modeling  
 Geoprocessing  
 Amphibian Ecology

### SKILLS

 R  
 tidyverse  
 markdown  
 git (básico).  
 python (básico).  
 bash (básico).  
 QGIS  
 GRASS GIS  
 GNU/Linux





### LANGUAGES

Portuguese (Native speaker)  
English (Intermediate)  
Spanish (Basic)

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 Short version

CV by **pagedown** R package.  
Code available on  GitHub.  
Last updated on 2023-02-11.

- 2016 ● **V Southern-Summer School on Mathematical Biology**  
São Paulo State University (UNESP) • 53 h  São Paulo, SP, Brazil 
- 2015 ● **Biology and conservation of amphibians and reptiles**  
Instituto Boitatá, IBEC • 44 h  Alfenas, MG, Brazil
- 2011 ● **Ecological data analysis with R**  
São Paulo State University (UNESP) • 40 h  Rio Claro, SP, Brazil



## SCHOLARSHIP & AWARDS

- 2022  
|  
2024 ● **Doctoral Graduate Scholarship**  
São Paulo Research Foundation (FAPESP) (BRL 91,002.24)  Rio Claro, SP, Brazil  
São Paulo State University (UNESP)  
Grant [#2022/01899-6](#)  
**Title:** Landscape structure as a predictor of taxonomic and functional diversity of amphibians in the Atlantic Forest  
**Aim:** 1) how the structure of landscapes is configured throughout the Atlantic Forest Biome, 2) how the structure of the landscape affects the taxonomic and functional diversity of species in general, and 3) analyze this same question of species-specific mode, in addition to analyzing co-occurrences
- 2017  
|  
2018 ● **Master Graduate Scholarship**  
São Paulo Research Foundation (FAPESP) (BRL 16,248.54)  Rio Claro, SP, Brazil  
São Paulo State University (UNESP)  
Grant [#2017/09676-8](#)  
**Title:** Effect of Landscape Modifications and Climate Changes on the Persistence of Amphibians in the Atlantic Forest  
**Aim:** (1) to present an assessment of the surveys of the amphibian communities for the Atlantic Forest, their composition and distribution; (2) to investigate how habitat loss and fragmentation on the regional scale can affect the current persistence of amphibians from different reproductive guilds; and (3) to investigate how climate change may affect the future persistence of amphibians of the genus *Brachycephalus*, considered highly sensitive to these climatic changes
- 2013  
|  
2015 ● **Scientific Initiation Scholarship**  
São Paulo Research Foundation (FAPESP) (BRL 10,539.87)  Rio Claro, SP, Brazil  
São Paulo State University (UNESP)  
Grant [#2013/02883-7](#)  
**Title:** Effect of Fragmentation on the persistence of anuran amphibians (Amphibia: Anura) within the Atlantic Forest  
**Aim:** (1) model the potential distribution based on the environmental suitability of the species of interest; (2) identify landscapes with high environmental suitability and surveys with high sampling effort in order to characterize the regional anurofauna; and (3) evaluate the relative contribution of landscape indices (percentage of forest cover, connectivity, relief and urban proximity) to the persistence of species using model selection for multiple competing hypotheses based on Akaike information theory



## RESEARCH EXPERIENCE

2015  
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2016

● **Research Assistant**  
São Paulo State University (UNESP)  
Spatial Ecology and Conservation Lab (LEEC)  
Statistical and spatial analyzes of mammal and ants biodiversity in the Atlantic Forest Biome

• 2000 h

📍 Rio Claro, SP, Brazil

From 2015 to 2016, I was a Research Assistant of Prof. Milton Cezar Ribeiro where I developed statistical and spatial analysis of mammal and ants biodiversity in the Atlantic Forest Biome

## PROFESSIONAL EXPERIENCE

2021  
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2022

● **Environmental consultant**  
Seleção Natural  
• Ecological Modeling

📍 Piracicaba, SP, Brazil

2020  
|  
2021

● **Environmental consultant**  
Seleção Natural  
• Ecological corridors  
• Landscape metrics

• LSCorridors  
• LSMetrics

📍 Piracicaba, SP, Brazil

2019  
|  
2021

● **Environmental consultant**  
PROECO Ambiental  
• Species distribution modeling

📍 Poços de Caldas, MG, Brazil

2018  
|  
2019

● **Environmental consultant**  
Seleção Natural  
• Ecological data analyst

📍 Piracicaba, SP, Brazil

2018  
|  
2019

● **Environmental consultant**  
Aquaflora  
• Species distribution modeling

📍 Curitiba, PR, Brazil

2018  
|  
2019

● **Environmental consultant**  
Associação de Levantamento Florestal do Amazonas  
• Shiny App

📍 Manaus, AM, Brazil

2018  
|  
2019

● **Environmental consultant**  
ECONecta  
• SIG specialist

• GRASS GIS

📍 Rio Claro, SP, Brazil

2015  
|  
2016

● **Environmental consultant**  
Geoinform  
• Herpetology field assistant

📍 Rio Claro, SP, Brazil

Since 2016, I have worked as an autonomous environmental consultant in the field of geoprocessing, analysis of ecological data, landscape ecology and species distribution modeling

Between 2018 and 2019, I composed a group of analysts to assess the impact of the Fundão dam rupture in Marina/MG (Brazil) on the Rio Doce Basin, where I compiled land cover information and built models for the distribution of terrestrial and aquatic species to several scenarios

## TEACHING EXPERIENCE

● **Courses**  
Total hours:  
Graduate: 300 h  
Undergraduate: 102 h

Since my formation I develop teaching activities, initially as a monitor. From the master's degree, I help and minister undergraduate and graduate courses, especially those related to Space Ecology, Species Distribution Models, Statistical Models in Ecology and Geoprocessing.

2021	<p>● <b>9. Introduction to the use of geospatial data in R</b></p> <p>Invited teacher Ecology, Biodiversity and Evolution Graduate Program São Paulo State University (UNESP) • 60 h</p> <p>• <a href="#">material</a></p>	<p>📍 Rio Claro, SP, Brazil</p>
2020	<p>● <b>8. Introduction to geospatial analysis with R</b></p> <p>Invited teacher Ecology, Biodiversity and Evolution Graduate Program São Paulo State University (UNESP) • 60 h</p> <p>• <a href="#">material</a></p>	<p>📍 Rio Claro, SP, Brazil</p>
2020	<p>● <b>7. Statistical Models in Ecology</b></p> <p>Teacher Ecology Undergraduate São Paulo State University (UNESP) • 30 h</p>	<p>📍 Rio Claro, SP, Brazil</p>
2019	<p>● <b>6. Introduction to Geoprocessing for Ethnobiology and Biodiversity Conservation</b></p> <p>Invited external teacher Ethnobiology and Nature Conservation Graduate Program Rural Federal University of Pernambuco (UFRPE) • 45 h</p> <p>• <a href="#">material</a></p>	<p>📍 Recife, PE, Brazil</p>
2018	<p>● <b>5. Statistical Models in Ecology</b></p> <p>Teaching assistant Ecology Undergraduate São Paulo State University (UNESP) • 12 h</p>	<p>📍 Rio Claro, SP, Brazil</p>
2017	<p>● <b>4. Ecological Niche Modeling: theory and practice</b></p> <p>Teaching assistant Ecology and Biodiversity Graduate Program São Paulo State University (UNESP) • 60 h</p>	<p>📍 Rio Claro, SP, Brazil</p>
2016	<p>● <b>3. Ecological Niche Modeling: theory and practice</b></p> <p>Teaching assistant Ecology Graduate Program The University of Campinas (UNICAMP) • 45 h</p>	<p>📍 Campinas, SP, Brazil</p>
2016	<p>● <b>2. Ecological Niche Modeling in R</b></p> <p>Teaching assistant Ecology and Biodiversity Graduate Program São Paulo State University (UNESP) • 30 h</p>	<p>📍 Rio Claro, SP, Brazil</p>
2015	<p>● <b>1. Quantitative Ecology</b></p> <p>Teaching assistant Ecology Undergraduate São Paulo State University (UNESP) • 60 h</p>	<p>📍 Rio Claro, SP, Brazil</p>

	<p>● <b>Workshops</b> Total hours: 104 h</p>	
2022	<p>● <b>12. Introduction to the R language for data manipulation and visualization</b> Short course instructor <u>XXXIII Ecology Studies Week</u> São Paulo State University (UNESP) • 09 h</p>	<p>📍 Rio Claro, SP, Brazil • <u>material</u></p>
2021	<p>● <b>11. Introduction to the R language for data manipulation and visualization</b> Short course instructor <u>XXXI Ecology Studies Week</u> São Paulo State University (UNESP) • 08 h</p>	<p>📍 Online • <u>material</u></p>
2021	<p>● <b>10. Geoprocessing with QGIS</b> Short course instructor <u>32ª Biology Studies Week</u> São Paulo State University (UNESP) • 03 h</p>	<p>📍 Online • <u>material</u></p>
2021	<p>● <b>9. Introduction to species distribution modeling using the R language</b> Workshop instructor <u>Mastozólogos Organizados em uma Conferência Online (MOCÓ)</u> Sociedade Brasileira de Mastozoologia • 06 h</p>	<p>📍 Online • <u>material</u></p>
2019	<p>● <b>8. Introduction to R Language</b> Short course instructor <u>XXX Ecology Studies Week</u> São Paulo State University (UNESP) • 08 h</p>	<p>📍 Rio Claro, SP, Brazil • <u>material</u></p>
2019	<p>● <b>7. Introduction to R Language</b> Short course instructor <u>30ª Biology Studies Week</u> São Paulo State University (UNESP) • 08 h</p>	<p>📍 Rio Claro, SP, Brazil • <u>material</u></p>
2019	<p>● <b>6. Introduction to Species Distribution Modeling using R Language: theory and practice</b> Short course instructor <u>9º Brazilian Congress of Herpetology</u> The University of Campinas (UNICAMP) • 07 h</p>	<p>📍 Campinas, SP, Brazil • <u>material</u></p>
2018	<p>● <b>5. Field work with amphibians</b> Short course instructor <u>29ª Biology Studies Week</u> São Paulo State University (UNESP) • 08 h</p>	<p>📍 Rio Claro, SP, Brazil</p>

Since 2014, I teach practical training courses, mainly related to the R language and Species Distribution Models

- 2016 ● **4. Field herpetology**  
Short course instructor  
[XXVII Ecology Studies Week](#)  
São Paulo State University (UNESP)  
• 15 h  
📍 Rio Claro, SP, Brazil
- 2016 ● **3. Introduction to software R: data management, graphs and statistical analysis**  
Short course instructor  
[XXVII Ecology Studies Week](#)  
São Paulo State University (UNESP)  
• 16 h  
📍 Rio Claro, SP, Brazil
- 2015 ● **2. Introduction to software R**  
Short course instructor  
[XXVI Ecology Studies Week](#)  
São Paulo State University (UNESP)  
• 08 h  
📍 Rio Claro, SP, Brazil
- 2014 ● **1. Organization of data in electronic sheets - Calc**  
Short course instructor  
[XXV Ecology Studies Week](#)  
São Paulo State University (UNESP)  
• 08 h  
📍 Rio Claro, SP, Brazil



## BOOKS

- 2022 ● **1. Ecological Analysis in R**  
*Nupee Recife*, PE. 640 p  
ISBN: 978-85-7917-564-0  
Site: <https://analises-ecologicas.com/>  
Da Silva FR, Gonçalves-Souza T, Paterno GB, Provete DB, **Vancine MH**



## PUBLICATIONS

- 2022 ● **24. Natural forest regeneration on anthropized landscapes could overcome climate change effects on the endangered maned sloth (*Bradypus torquatus*, Illiger 1811)**  
*Journal of Mammalogy*, gvac084  
DOI: [10.1093/jmammal/gvac084](https://doi.org/10.1093/jmammal/gvac084)  
Santos PM, Ferraz KMPMB, Ribeiro MC, Niebuhr BB, **Vancine MH**, Chiarello AC, Paglia AP
- 2022 ● **23. Mammals in São Paulo State: diversity, distribution, ecology, and conservation**  
*Biota Neotropica*, 22(spe): e20221363  
DOI: [10.1590/1676-0611-BN-2022-1363](https://doi.org/10.1590/1676-0611-BN-2022-1363)  
Galetti M, Carmignotto AP, Percequillo AR, Santos MCO, Ferraz KMPMB, Lima F, **Vancine MH**, Muyllaert RL, Bonfim FCG, Magioli M, Abra FD, Chiarello AG, Duarte JMB, Morato R, Beisiegel BM, Olmo F, Galetti Jr. PM, Ribeiro MC

## Citations

[Publons](#)

[Scopus](#)

[Google Scholar](#)

- 2022 ● **22. The fate of vegetation remnants in the southern Amazon's largest threatened hotspot: part (I) a 33-year analysis of LULCC in the Tapajos River basin, Brazil**  
*Research, Society and Development*, 11(10), e448111032553  
 DOI: [10.33448/rsd-v11i10.32553](https://doi.org/10.33448/rsd-v11i10.32553)  
 Borges GA, Mancilla G, Siqueira AB, **Vancine MH**, Ribeiro MC, Maia JCS
- 2022 ● **21. Present and future distribution of bat hosts of sarbecoviruses: implications for conservation and public health**  
*Proceedings of the Royal Society B* 289(1975), 20220397  
 DOI: [10.1098/rspb.2022.0397](https://doi.org/10.1098/rspb.2022.0397)  
 Muylaert RL, Kingston T, Luo J, **Vancine MH**, Galli N, Carlson CJ, John RS, Rulli MC, Hayman DT
- 2022 ● **20. Climate change impacts on the *Copernicia alba* and *Copernicia prunifera* (Arecaceae) distribution in South America**  
*Brazilian Journal of Botany* 45, 807–818.  
 DOI: [10.1007/s40415-022-00801-8](https://doi.org/10.1007/s40415-022-00801-8)  
 Costa MF, Francisconi AF, **Vancine MH**, Zucchi MI
- 2022 ● **19. Effects of climate change on distribution and areas that protect two neotropical marsupials associated with aquatic environments**  
*Ecological Informatics* 68:101570  
 DOI: [10.1016/j.ecoinf.2022.101570](https://doi.org/10.1016/j.ecoinf.2022.101570)  
 Ribeiro-Souza P, Graipel ME, Astúa D, **Vancine MH**, Pires JS
- 2022 ● **18. Forest cover and connectivity have pervasive effects on the maintenance of evolutionary distinct interactions in seed dispersal networks**  
*Oikos* 2022(2):oik.08240  
 DOI: [10.1111/oik.08240](https://doi.org/10.1111/oik.08240)  
 Monteiro ECS, Pizo MA, **Vancine MH**, Ribeiro MC
- 2021 ● **17. Invasive wild boar's distribution overlap with threatened native ungulate in Patagonia**  
*Journal of Mammalogy* 102(5):1298-1308  
 DOI: [10.1093/jmammal/gyab099](https://doi.org/10.1093/jmammal/gyab099)  
 Bercê W, Bello C, Mendes CP, **Vancine MH**, Galetti M, Ballaru SA
- 2021 ● **16. Setting Priority Conservation Management Regions to Reverse Rapid Range Decline of a Key Neotropical Forest Ungulate**  
*Global Ecology and Conservation* 31:e01796  
 DOI: [10.1016/j.gecco.2021.e01796](https://doi.org/10.1016/j.gecco.2021.e01796)  
 Oshima JEF, Jorge MLSP, Sobral-Souza T, Börger L, Keuroghlian A, Peres CA, **Vancine MH**, Collen B, Ribeiro MC
- 2021 ● **15. Distribution of macroalgal epiphytes and host species from the Cuban marine shelf inferred from ecological modelling**  
*Aquatic Botany* 172:103395  
 DOI: [10.1016/j.aquabot.2021.103395](https://doi.org/10.1016/j.aquabot.2021.103395)  
 Jover A, Cabrera A, Ramos A, **Vancine MH**, Suárez AM, Machell J, Perez-Llórens JL

- 2021 ● **14. Future climate change will impact the size and location of breeding and wintering areas of migratory thrushes in South America**  
*The Condor: Ornithological Applications* 123:1-16  
 DOI: [10.1093/ornithapp/duab006](https://doi.org/10.1093/ornithapp/duab006)  
 Da Silveira NS, **Vancine MH**, Jahn AE, Pizo MA, Sobral-Souza T
- 2021 ● **13. Host diversity outperforms climate as a global driver of symbiont diversity in the bird-feather mite system**  
*Diversity and Distributions* 27(3):416-426  
 DOI: [10.1111/ddi.13201](https://doi.org/10.1111/ddi.13201)  
 Gusmão RAF, Hernandez FRA, **Vancine MH**, Naka LN, Doña J, Gonçalves-Souza T
- 2021 ● **12. Environmental niche and functional role similarity between invasive and native palms in the Atlantic Forest**  
*Biological Invasions* 21:741-754  
 DOI: [10.1007/s10530-020-02400-8](https://doi.org/10.1007/s10530-020-02400-8)  
 Bello C, Cintra ALP, Barreto E, **Vancine MH**, Sobral-Souza T, Graham CH, Galetti M
- 2020 ● **11. Effects of landscape modification on species richness patterns of fruit-feeding butterflies in Brazilian Atlantic Forest**  
*Diversity and Distributions* 26(2):196-208  
 DOI: [10.1111/ddi.13007](https://doi.org/10.1111/ddi.13007)  
 Santos JP, Sobral-Souza T, Brown Jr KS, **Vancine MH**, Ribeiro MC, Freitas AVL
- 2020 ● **10. Fragmented tropical forests lose mutualistic plant-animal interactions**  
*Diversity and Distributions* 26(2):154-168  
 DOI: [10.1111/ddi.13010](https://doi.org/10.1111/ddi.13010)  
 Marjakangas E, Abrego N, Grøtan V, Lima RAF, Bello C, Bovendorp RS, Culot L, Hasui E, Muylaert RL, Lima F, Niebuhr B, Oliveira AA, Pereira L, Prado I, Stevens RD, **Vancine MH**, Ribeiro MC, Galetti M, Ovaskainen O
- 2019 ● **9. Predicting the potential hybridization zones between native and invasive marmosets within Neotropical biodiversity hotspots**  
*Global Ecology and Conservation* 20:e00706  
 DOI: [10.1016/j.gecco.2019.e00706](https://doi.org/10.1016/j.gecco.2019.e00706)  
 Moraes AM, **Vancine MH**, Moraes AM, Cordeiro CLO, Pinto MP, Lima AA, Culot L, Silva TSF, Collevatti RG, Ribeiro MC, Sobral-Souza T
- 2019 ● **8. Land-use changes and the expansion of biofuel crops threaten the giant anteater in southeastern Brazil**  
*Journal of Mammalogy* 100(2):435-444  
 DOI: [10.1093/jmammal/gyz042](https://doi.org/10.1093/jmammal/gyz042)  
 Bertassoni A, Costa RT, Gouvea JA, Bianchi BC, Ribeiro JW, **Vancine MH**, Ribeiro MC
- 2018 ● **7. Spatial prediction of risk areas for vector transmission of *Trypanosoma cruzi* in the State of Paraná, southern Brazil**  
*PLOS Neglected Tropical Diseases* 12(10):e0006907  
 DOI: [10.1371/journal.pntd.0006907](https://doi.org/10.1371/journal.pntd.0006907)  
 Ferro e Silva AM, Sobral-Souza T, **Vancine MH**, Muylaert RL, Abreu AP, Pelloso SM, Carvalho MDB, Andrade L, Ribeiro MC, Toledo MJO



- 2018 ● **6. A note on the territorial limits of the Atlantic Forest**  
*Oecologia Australis* 22(3):302–311  
DOI: [10.4257/oeco.2018.2203.09](https://doi.org/10.4257/oeco.2018.2203.09)  
Muylaert RL, **Vancine MH**, Bernardo R, Oshima JEF, Sobral-Souza T, Tonett VR, Niebuhr BBS, Ribeiro MC
- 2018 ● **5. ATLANTIC AMPHIBIANS: a data set of amphibian communities from the Atlantic Forests of South America**  
*Ecology* 99(7):1692–1692  
DOI: [10.1002/ecy.2392](https://doi.org/10.1002/ecy.2392)  
**Vancine MH**, Duarte KS, Souza YS, Giovanelli JGR, Sobrinho PMM, López A, Bovo RP, Maffei F, Lion MB, Ribeiro-Júnior JW, Brassaloti R, Ortiz C, Sawakuchi HO, Forti LR, Cacciali P, Bertoluci J, Haddad CFB, Ribeiro MC
- 2018 ● **4. Efficiency of protected areas in Amazon and Atlantic Forest conservation: A spatio-temporal view**  
*Acta Oecologica* 87:1–7  
DOI: [10.1016/j.actao.2018.01.001](https://doi.org/10.1016/j.actao.2018.01.001)  
Sobral-Souza T, **Vancine MH**, Ribeiro MC, Lima-Ribeiro MS
- 2017 ● **3. Forest cover influences occurrence of mammalian carnivores within Brazilian Atlantic Forest**  
*Journal of Mammalogy* 98:1721–1731  
DOI: [10.1093/jmammal/gyx103](https://doi.org/10.1093/jmammal/gyx103)  
Regolin AL, Cherem JJ, Graipel ME, Bogoni JA, Ribeiro JW, **Vancine MH**, Tortato MA, Oliveira-Santos LG, Fantacini FM, Luiz MR, Castilho PV, Ribeiro MC, Cáceres, NC
- 2017 ● **2. Impacts of mining activities on the potential geographic distribution of eastern Brazil mountaintop endemic species.**  
*Perspectives in Ecology and Conservation* 15(3):172–178  
DOI: [10.1016/j.pecon.2017.07.005](https://doi.org/10.1016/j.pecon.2017.07.005)  
De Castro Pena J, Goulart F, Fernandes GW, Hoffmann D, Leite FSF, Santos NB, Soares-Filho B, Sobral-Souza T, **Vancine MH**, Rodrigues M
- 2017 ● **1. High mammal species turnover in forest patches immersed in biofuel plantations**  
*Biological Conservation* 210:352–359  
DOI: [10.1016/j.biocon.2017.02.033](https://doi.org/10.1016/j.biocon.2017.02.033)  
Beca G, **Vancine MH**, Carvalho CS, Pedrosa F, Alves RSC, Buscariol D, Peres CA, Ribeiro MC, Galetti M