

LUDMILA RATTIS

Woodwell Climate Research Center
Amazon Environmental Research Institute

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RESEARCH INTERESTS

My research is focused on how climate and deforestation impact native and anthropogenic environments in tropical ecosystems. I am particularly interested in understanding the effects of land-use change on regional climate, native species richness and composition, and agricultural inputs and outputs. To address these questions, I combine remotely sensed, census, and field-level data to examine the relationships between human activities and ecological function across many spatial scales.

EDUCATION

Universidade Estadual de Campinas (UNICAMP), Campinas, São Paulo, Brazil
Ph.D., Department of Ecology (2016)
Carleton University, Ottawa, Ontario, Canada
Doctoral Stay with joint supervision, Geomatics Landscape Ecology Lab (2015)
Universidade de São Paulo (USP), Ribeirão Preto, São Paulo, Brazil
MSc., Department of Botany and Entomology (2011)
Universidade do Estado de Minas Gerais (UEMG), Passos, Minas Gerais, Brazil
BSc in Biology (2008)

PROFESSIONAL APPOINTMENTS

Woodwell Climate Research Center, Falmouth, MA
Assistant Scientist, Amazon Program (Apr 2022 – now)
Amazon Environmental Research Institute, Brasília, Distrito Federal, Brazil
Researcher (Jul. 2019 – now)
Woods Hole Research Center, Falmouth, MA
Postdoctoral Fellow, Amazon Program (Jul. 2017 – Dec. 2018)
Amazon Environmental Research Institute, Brasília, Distrito Federal, Brazil
Consultant (Jan. 2019 – May 2019)
Amazon Environmental Research Institute, Canarana, Mato Grosso, Brazil
Postdoctoral Fellow, Amazon Program (Mar. 2016 - Jun. 2017)

PEER-REVIEWED PUBLICATIONS

- Silva, D. S., Arima, E. Y., dos Reis, T. N., & **Rattis, L.** (2023). Temperature effect on Brazilian soybean yields, and farmers' responses. *International Journal of Agricultural Sustainability*, 21(1), 2173370.
- Boscolo, D., Nobrega Rodrigues, B., Ferreira, P. A., Lopes, L. E., Tonetti, V. R., Reis dos Santos, I. C., **Rattis, L.**... & Glebya Maciel Quirino, Z. (2023). Atlantic flower–invertebrate interactions: A data set of occurrence and frequency of floral visits.
- Banerjee, O., Cicowiez, M., Macedo, M. N., Malek, Ž., Verburg, P. H., Goodwin, S., **Rattis, L.**;... & Murillo, J. Á. (2022). Can we avert an Amazon tipping point? The economic and environmental costs. *Environmental Research Letters*, 17(12), 125005.

- Sotirov, M., Azevedo-Ramos, C., **Rattis, L.**, & Berning, L. (2022). Policy options to regulate timber and agricultural supply-chains for legality and sustainability: The case of the EU and Brazil. *Forest Policy and Economics*, 144, 102818.
- Boscolo, D., Nobrega Rodrigues, B., Ferreira, P. A., Lopes, L. E., Tonetti, V. R., Reis dos Santos, I. C., **Rattis, L.**; ... & Glebya Maciel Quirino, Z. (2022). Atlantic flower–invertebrate interactions: A data set of occurrence and frequency of floral visits.
- Azevedo-Ramos, C., Sotirov, M., & **Rattis, L.** (2022). Amazon rainforest future under the spotlight: synergies and trade-off between conservation and economic development. *Frontiers in Forests and Global Change*, 229.
- Ribeiro, A. F., Brando, P. M., Santos, L., **Rattis, L.**, Hirschi, M., Hauser, M., ... & Zscheischler, J. (2022). A compound event-oriented framework to tropical fire risk assessment in a changing climate. *Environmental Research Letters*, 17(6), 065015.
- de Oliveira, H. F. M., Alkmin, F. M., **Rattis, L.**, & Silverio, D. V. (2022). Amazon Indigenous peoples: lawsuit threatens lands. *Nature*, 605(7911), 619-619.
- Rattis, L.**, Brando, P. M., Macedo, M. N., Spera, S. A., Castanho, A. D., Marques, E. Q., ... & Coe, M. T. (2021). Climatic limit for agriculture in Brazil. *Nature Climate Change*, 11(12), 1098-1104.
- De Faria, B. L.; Marano, G.C.P.; Silva, C.A.; Dantas, V.L.; **Rattis, L.**; Rech, A.R.; Collalti, A. (2021) "Model-based estimation of Amazonian forests recovery time after drought and fire events." *Forests* 12, no. 1:8.
- Brando, P., Macedo, M.; Silvério, D.; **Rattis, L.**; Paolucci, P.; Alencar, A.; Coe, M. and Amorim, C. (2020) "Amazon wildfires: Scenes from a foreseeable disaster." *Flora*: 151609.
- Diniz-Filho, José Alexandre Felizola, Barbosa, A.C.O.F., Chaves, L. J.; Silva e Souza, K.; Dobrovolski, R.; **Rattis, L.**; Terribile, L.C. et al. (2020) Overcoming the worst of both worlds: integrating climate change and habitat loss into spatial conservation planning of genetic diversity in the Brazilian Cerrado. *Biodiversity and Conservation* 29, no. 5 (2020): 1555- 1570.
- Brando, P.B.; Paolucci, L.; Ummenhofer, C.C.; Ordway, E.M.; Hartmann, H.; Cattau, M.; **Rattis, L.**; Medjibe, V.; Coe, M.T.; Balch, J. (2019) Droughts, Wildfires, and Forest Carbon Stocks: a Pantropical Synthesis. *Annual Review of Earth and Planetary Sciences*. v.47, p.555 - 581, 2019.
- Paolucci, L.N.; Pereira, R.L.; **Rattis, L.**; Silvério, D.V.; Marques, N.C.S.; Macedo, M.N.; Brando, P.B. (2019). Lowland tapirs facilitate seed dispersal in degraded Amazonian forests. *Biotropica*. v.51, p.245-260.
- Marques, N.C.S.; **Rattis, L.**; Nomura, F. (2019) Local environmental conditions affecting anuran tadpoles? microhabitat choice and morphological adaptation. *Marine and Freshwater Research*, 70 (3), 395-401.
- Ramos, F.N.; Mortara, S.R.; Monalisa-Francisco, N.... **Rattis, L.** (2019) ATLANTIC EPIPHYTES: a data set of vascular and non-vascular epiphyte plants and lichens from the Atlantic Forest. *Ecology* 100 (2), e02541.
- Farache, F.H.A. ; Cruaud, A. ; Rasplus, J. ; **Rattis, L.** ; Kjellberg, F. ; Cerezini, M.T. ; Pereira, R.A.S. Insights into the structure of plant-insect communities: Specialism and generalism in a regional set of non-pollinating fig wasp communities. *Acta Oecologica*, 2018.
- Dobrovolski, R., Loyola, R., **Rattis, L.**, Gouveia, S. ... & Diniz-Filho, J. A. F. (2018). Science and democracy must orientate Brazil's path to sustainability. *Perspectives in Ecology and Conservation*, 16(3), 121-124.

- Rattis, L.**, Dobrovolski, R.; Talebi, M; Loyola, R. (2018) Geographic range-scale assessment of species conservation status: A framework linking species and landscape features. *Perspectives in Ecology and Conservation*, 16 (2), 97-104.
- Lanna, E ; **Rattis, L** ; Cavalcanti, F. F. The presence of the diagnostic character of the genus (Amphoriscidae, Calcarea, Porifera) may depend on the volume and body wall thickness of the sponges. *Invertebrate Biology*, v. 136, p. 1-9, 2017.
- Gouveia, S.F.; Souza-Alves, J.P.; **Rattis, L** ; Dobrovolski, R. ; Jerusalinsky, Leandro; Beltrão-Mendes, Raone ; Ferrari, Stephen F. . Climate and land use changes will degrade the configuration of the landscape for titi monkeys in eastern Brazil. *Global Change Biology*, v. 22, p. 2003-2012, 2016.
- Dobrovolski, R. ; **Rattis, L.** Water collapse in Brazil: the danger of relying on what you neglect. *Natureza e Conservação*, v. 13, p. n-n, 2015.
- Dobrovolski, Ricardo ; **Rattis, L.** Brazil should help developing nations to foster agriculture and environmental protection. *Frontiers in Ecology and the Environment*, v. 12, p. 376, 2014.
- Rattis, L.**; Modesto-Zampierom, S. L. Estudo da Biologia Floral e Entomofauna Associada ao Nabo Forrageiro (*Raphanus sativus*, Cruciferae): Resultados Parciais. *Revista Brasileira de Biociências* (Impresso), v. 5, p. 135-137, 2007.

MANUSCRIPTS UNDER REVIEW and IN PREPARATION

- Lemes, P.C.; **Rattis, L.**; Terribile, L.C.; Lima-Ribeiro, M.S.; Haddad, C. (2021) The Heat Is On: Vulnerability of endemic species in a rapidly changing world. *Scientific Reports*. In Revision.
- Borges-Almeida, K.; **Rattis, L.**; Melo, G.; Silverio, D. Pastures and low landscape richness are negatively linked to small mammals' diversity in the Brazilian savanna. *Biotropica*. Under Review.
- Rattis, L.**; Brando, P.; Rebellatto, B.; Cohn, A.; Macedo, M.; Coe, M. Forest amount affects soybean productivity in the Brazilian agricultural frontier
- Rattis, L.**; Loyola, R.; Fahrig, L. On the habitat and landscapes: the effect of scale and data on species response.
- Dobrovolski, R.; **Rattis, L.** Machado, F.; Vilela, B. Estimating the changes in abundance of primates in Brazil.
- Brando, P.; **Rattis, L.**; Paolucci, L.; Durigan, G.; Hoffmann, W. Prescribed fires during extreme events can drive forest-savanna transition.
- Brando, P.; Paolucci, L.; Maracahipes, L.; Rebellatto, B.; Maracahipes-Santos, L.; **Rattis, L.** Legacies of compounding forest disturbances on the production and diversity of fruits and seeds in southeast Amazonia

BOOK IN PREPARATION

- Rattis, L.** Veranico (The Dry-Spell). Publisher: Companhia das Letras. Contract signature: December 2020. Probable date of publication: November 2023.

OTHER PUBLICATIONS

Book chapter:

- PEREIRA, R.A.S. ; FARACHE, F.H.A. ; COELHO, L.F.M. ; **RATTIS, L** ; CEREZINI, M.T. Vespas de figo. In: Cleber Macedo Polegatto. (Org.). A fauna de insetos da Mata Santa Tereza. 1ed. Ribeirão Preto: São Francisco, 2010, v. 1, p. 143-160.

FUNDED PROJECTS

- **NASA.** *Land-cover and Land-use Change at the Frontier: Socioeconomic and Environmental Factors Influencing Land-Use Transitions in the Cerrado Biome.* Award period: 01/01/2023-12/31/2027. Lead Institution: University of Vermont, Project Role: Co-Investigator.
- **BAYER.** *Climate and ecosystem integrity: Below and aboveground carbon storage as a pathway for sustainable agriculture.* Award period: 12/15/2022-12/31/2027. Lead Institution: Woodwell Climate Research Center and Amazon Environmental Research Institute, Project Role: Principal Investigator.
- **Fund for Climate Solution.** Intensification in the world's largest agricultural frontier: the impacts of land use transition on local climate and crop yields. Award period: 01/15/2022 - 07/15/2023. Lead Institution: Woodwell Climate Research Center, Project Role: Principal Investigator.
- **AMAGGI.** A biodiversidade em áreas de cultivo do grupo AMAGGI – monitoramento propositivo da fauna e flora da paisagem agrícola. Award period: 06/15/2021 - 05/15/2026. Lead Institution: Amazon Environmental Research Institute, Project Role: Principal Investigator.
- **NSF INFEWS/T1.** *Intensification in the world's largest agricultural frontier: Integrating food production, water use, energy demand, and environmental integrity in a changing climate.* Award period: 01/01/2018-12/31/2021. Lead Institution: Woodwell Climate Research Center, Project Role: Researcher.
- **GIZ - Sustainable Soy.** *Sustainability and Adding Value in the Production Chains of the State of Maranhão, Brazil.* Award period: 12/01/2020 – 11/20/2021. Lead Institution: IPAM; Project Role: Researcher.
- **MOORE - FIRE.** From reaction to preparedness: Using science to combat wildfires, build awareness, and promote climate resilience in Pan-Amazon Indigenous Lands and Protected Areas. Award period: Dec. 2020-Jan. 2022. Lead Institution: Woodwell Climate Research Center. Project Role: Postdoc.
- **Global Wildlife Conservation.** Science for a fire free Amazonia: *The impacts of the 2019 fires on forests.* Award period: Jan 2020 – March 2021. Lead Institution: IPAM. Project Role: Researcher
- **MaxPlanck Institute.** *Tanguro Flux Project: measurement of eddy covariance fluxes of energy, water and carbon dioxide at the Tanguro Field site.* Award period: Jan 2021 – Dec 2023. Lead Institution: IPAM. Project Role: Researcher

AWARDS AND FELLOWSHIPS

- BPBES - Brazilian Platform for Biodiversity and Ecosystem Services - most accessed text ("The fires in the Amazon explained in 10 points") by on the Nexa Public Policy Platform (2021)
- 'Marcio Ayres' award for the best scientific paper published by a young scientist in the periodical Perspectives in Ecology and Conservation between 2016-2018 (2018)
- FAPESP Advanced School in Food, Water and Energy Nexus Fellowship (2018)
- Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) Postdoctoral Research Grant (Jul. 2017 - Dec. 2018)

- FAPESP PhD Research Grant (Aug 2012 - Feb. 2014)
- FAPESP Advanced School in Mathematical Biology Fellowship (2014)
- Invited Professor, Federal University of Bahia (UFBA), Bahia (2013)
- Brazilian National Space Agency
- FAPESP MSc Research Grant (Aug 2009 - Feb. 2011)
- FAPEMIG Research Experiences for Undergraduates Grant (2006-2007)
- UEMG Research Experiences for Undergraduates Grant (2005-2006)

EDUCATION ACTIVITIES

Teaching:

Introduction to Landscape Ecology, Department of Ecology and Conservation, UNEMAT (2016)
Teaching Assistant, Graduate Level

Introduction to Population Ecology, Department of Biochemistry, UFG (2014)
Teaching Assistant, Undergraduate Level

Coevolution, Department of Biology, UFBA (2013)
Teaching Assistant, Undergraduate Level

Mentorship:

Graduate committee member:

Daniel Plazas Jimenez (PhD, Ecology and Evolution, Federal University of Goiás, 2022)

Vanessa Soares Ribeiro (PhD, Ecology, Federal University of Vicosa, 2020)

Karen Adryanne Borges Almeida (MSc, Ecology and Conservation, University of Mato Grosso, 2018)

Rogério Libério (MSc, Ecology and Conservation, University of Mato Grosso, 2017)

Co-Advisor:

Bianca Rebelatto (MSc, Ecology and Conservation, University of Mato Grosso, 2021-2023)

Taiza Lopes (MSc, Ecology and Conservation, University of Mato Grosso, 2022-2024)

Luis Gustavo Carvalho (MSc, Ecology and Conservation, University of Mato Grosso, 2023-2025)

Luis Gustavo Carvalho (Biology, Undergraduate, University of Brasília, 2021-2022)

PROFESSIONAL ACTIVITIES AND OUTREACH

- **Professional Memberships:** American Geophysical Union (AGU), International Biogeography Society (IBS), Associação Brasileira de Ciência Ecológica e Conservação (ABECO)
- **Board of editors:** *Biological Conservation and Frontiers of Forests and Global Change*
- **Reviewer:** *Biological Conservation, Frontiers of Forests and Global Change, Global Change Biology, Diversity and Distributions, Biodiversity and Conservation, Biotropica, Perspectives in Ecology and Conservation, Plos One, Peer J, Animal Biodiversity and Conservation, Journal of Vegetation Science.*
- **Media Outreach:** Research featured in Washington Post, CBS, *Mongabay, Folha de São Paulo, Agencia FAPESP, Nexo Políticas Públicas, Nexo Jornal, and TV UNICAMP*
- **Coordinated sessions at professional meetings:** Co-organizer of the *VII International Biogeography Society Meeting*, Salvador 2017; Co-organizer of the *IV Symposium on Theoretical Ecology*, Goiânia/Brazil, Nov 2013.

LANGUAGES AND SKILLS

Fluent Brazilian Portuguese and English, Basic Spanish, R, Google Earth Engine, ArcInfo, and NetLogo

REFERENCES

1. Rafael Loyola, Federal University of Goiás, Dept. of Ecology and Evolution (Ph.D. Adviser)

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2. Michael Coe, Woodwell Climate Research Center (Postdoctoral Adviser)
Email: mtcoe@woodwell.org, Phone: (508) 444-1536

3. Lenore Fahrig, Geomatics Landscape Ecology Lab, Carleton University (Ph.D. Co-Adviser)
Email: Lenore.Fahrig@carleton.ca, Phone: (613) 520-2600 x 3856