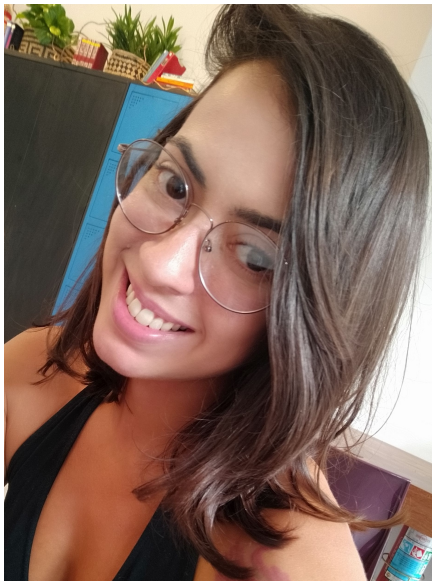

Tainá C. Rocha

Biologist (Ph.D.)

- Rio de Janeiro, Rio de Janeiro, Brazil.
- taina013@gmail.com

Skills

Quantum GIS & ArcGis 5+ yrs

R/Rstudio 4+ yrs.

Git/Github 3+ yrs.

Linux OS 3+ yrs.

Virtual machines and clusters Microsoft Azure 2+ yrs.

Markdown & LaTeX 1+ yrs.

Biography

I am a researcher working on patterns of biodiversity distribution, focusing on the impacts of global change (climate change and land-use and land-cover change). My recent interests and work comprise: **1.** Analysis of climate data and land use and land cover data under different scenarios of climate change, **2.** Spatial analysis of species diversity (alpha and beta diversity), **3.** Ecological niche models/species distribution models and other niche analyses to assess the impacts of global changes on biodiversity, **4.** Biogeographical patterns and evolutionary history in the Neotropics.
Note: I use open-source tools and platforms. I am interested in good practices about open science (open databases, open software, etc.), good workflows and reproducibility.

Work experience

Independent researcher **Apr./2021 - today**

Home Office

1- Forest under different Shared Socioeconomic Pathways'(SSPs). Here I assess the forest's land-use classes GCAM-Demeter under different scenarios of climate change for three temporal slices (2020, 2030 and 2050).

Repository URL

2- Amazonian and Atlantic forest connections over time: bird lineages with disjunct distribution as models to test these connections.

Repository URL

Education

June/2013 - Aug./2017

Ph.D. in Zoology

Emílio Goeldi Museum (Museu Paraense Emílio Goeldi), Pará-Brazil

Feb./2010 - Apr./2012

MSc. in Environmental biology

Federal University of Pará, Brazil

Mar./2006 - Feb./2010

Degree in biological science

Federal University of Pará, Brazil

Complementary Training Courses

Apr. 2021

Flexdashboard: Interactive panels using R

Purpose: Analyze. Share. Reproduce. Your data tells a story. Use rmarkdown and Flexdashboard and transform your analysis into high-quality documents, reports, presentations and dashboards.

Webpage

Apr. 2021

Managing tables with dplyr R package

Purpose: The main functions of dplyr for handling tables.

Webpage

Postdoctoral research **Aug./2019- Apr./2021**

Supervisor:

Marinez Ferreira de Siqueira

Botanical Garden Research Institute of Rio de Janeiro

1- Beta diversity in Caatinga dry tropical forest.

Repository URL

2- Climatic niche analysis for *Syzygiella rubricaulis* (Bryophytes).

Repository URL

3- The first botanical explorations of bryophyte diversity in the Brazilian Amazon mountains: high species diversity, low endemism, and low similarity.

Repository URL

4- Ecological niche models with future projections for Dimorphandra wilsonii Rizzini (Fabaceae) presented to Green List in the three-year activity plan of the Brazilian Plant Red List Authority member of the Plant Conservation Commitee between 2017-2020 and the Species Survival Commission of the International Union for Conservation of Nature (IUCN).

Repository URL

5- Ferns and lycophytes diversity of Tijuca forest.

Repository URL

6- Classes in National School of Tropical Botany of Botanical Garden of Rio de Janeiro (Postgraduate). Ecological niche modeling: theory and practice. Modeling potential species distribution. Niche concept and its application in modeling. Modeling algorithms. Source of biotic and abiotic data. Generation of maps and spatial analysis using GIS. Tools for processing and preparing biotic and abiotic data. Use of programming in R environment for modeling. Modeling applications. Model testing and validation. 40h

Webpage class

7- Guest speaker in RNP Forum. Challenges of Digital Transformation in Teaching and Research Connecting data and experiences: Biodiversity, Information and Communication Technologies in Brazil.

Instructor **Oct./2019 & Feb./2020**

Department of Biology
Pontifical Catholic University of Rio de Janeiro

1- Public tools for spatial analysis of biodiversity. 40h
2- Ecological Niche Models . 40 h

Complementary Training Courses

Feb. 2021

Regular expressions for data cleaning and transforming

Purpose: Specifically, we will address the potential of regex (regular expressions) as part of the data cleaning and transformation process using Tidyverse R packages.

Webpage

Aug./2020 - Dec/2020

Open Life Science- OLS

Purpose: Training for early stage researchers and young leaders interested in furthering their Open Science skills

Outcome: Ambassadors for Open Science practice, training and education across multiple European and international bioinformatics communities.

Website

Sept. 2020

Latin-R & R-Ladies Natal: Writing academic manuscripts using rmarkdown

Purpose: This workshop provided the different steps and tools for writing academic manuscripts or technical reports in an automated and reproducible way using R and rmarkdown.

Webpage

Repository URL

Postdoctoral research — **Aug./2017- July/2019**

Supervisor:

Mariana Moncassim Vale

Ecology department, University of Rio de Janeiro

1- In order to make Land-Use Harmonization data (`https://luh.umd.edu/`) more accessible and readily usable, we converted NetCDF files as Geotiff raster files for researchers with standard GIS skills.

Repository URL

2- Ecological niche models (ENMs) analysis for *Carpornis melanocephala* (Passeriformes: Cotingidae) in Rio de Janeiro State,Brazil.

Repository URL

3- Ecological niche modeling and niche similarity test to compares two divergent lineages of *Microtus californicus* (Rodentia, Cricetidae).

Repository URL

4- Workshop "Evolutionary Rescue" and its implications for the conservation of biodiversity. The workshop was organized by José Alexandre Diniz-Filho professor. The general concept of "evolutionary rescue" refers to the possibility of rapid Darwinian adaptation of populations under a strong effect of environmental stress. More specifically in this workshop we discussed: 1) the concept of evolutionary rescue and the theoretical models in evolutionary genetics that have been used to study this process, and; 2) the integration of these theoretical models with ecological niche modeling techniques, in a context of climate change and anthropogenic changes in the landscape, 3) their implications for the conservation of diversity in the face of these changes, at different spatial scales. Analyzes were implemented for some species of amphibians, such as model organisms, and the possibilities of expanding these analyzes to a global scale were discussed, and several sub-projects to be carried out in the coming years on this topic were defined. 20h

Webpage

Guest lecture. Biological Sciences- Bachelor's Degree — **Nov./2018 & Nov/2019**

Veiga de Almeida University

1- Ecological niche models and potential species distribution applied in biogeographic studies. 6h

Guest lecture. Biological Sciences Undergraduate — **Sep. 2018**

Estácio de Sá University

1- Exploring biotic and abiotic data for ecological niche models under different scenarios of climate change. 3h

Guest lecture. Biological Sciences- Bachelor's Degree — **Aug./2017 & Aug./2018**

Federal Rural University of the Amazon

1- Geographic Information System (GIS). 12 h
2- Data for ecological niche models. 12h

High school teacher — **Aug./2015 & Aug/2017**

Dinamica Natural, Rio de Janeiro

Website

Interests

- Biodiversity
- Neotropics
- Climate change
- Land-use land-cover
- Open source
- Open science

Contact

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github.com/Tai-Rocha

Periodical reviewer Mar./2019 - today

1- Oecologia Australis `https://revistas.ufrj.br/index.php/oa`
Three reviews
2- Perspectives in Ecology and Conservation `https://www.journals.elsevier.com/perspectives-in-ecology-and-conservation`
Two reviews
3-Frontiers in Ecology and Evolution `https://www.frontiersin.org/journals/ecology-and-evolution`
One review

Publications & preprints

- Vale, M., Lima-Ribeiro, M. & Rocha, T. (2021). "Global land-use and land-cover data for ecologists: historical, current and future scenarios". In: *Preprint*, v. 29, p. 2663-2688.
  Webpage

- Costa, D., Nadal, P. & Rocha, T. (2020). "The first botanical explorations of bryophyte diversity in the Brazilian Amazon mountains: high species diversity, low endemism, and low similarity. ". In: *Biodiversity and conservation*, v. 29, p. 2663-2688.
  Webpage

- Silva, S. et al. (2019). A dynamic continental moisture gradient drove Amazonian bird diversification". In: *Science advances*, v. 5, p. eaat5752.
  Webpage

- Diniz'Filho, J. et al. (2019). "A macroecological approach to evolutionary rescue and adaptation to climate change.". In: *Ecography*, v. 42, p. 1124-1141.
  Webpage

- Rocha, T. et al. (2015). "Molecular phylogeny and diversification of a widespread Neotropical rainforest bird group: The Buff-throated Woodcreeper complex, *Xiphorhynchus guttatus/susurrans* (Aves: Dendrocolaptidae)". In: *Molecular phylogenetics and evolution*, , v. 85, p. 131-140.
  Webpage

- Aleixo, A. et al. (2014). "Instabilidade Climática e diversidade de espécies na Amazônia". In: *Cenário para Amazônia*,. 1ed.Manaus: INPA, 2014, v. 1, p. 7-19.
  Webpage

- Rodrigues-Filho, L. et al. (2009). "Identification and phylogenetic inferences on stocks of sharks affected by the fishing industry off the Northern coast of Brazil". In: *Genetics and molecular biology*, , v. 85, p. 131-140.
  Webpage

Member of Examination Committee

- **Final undergraduate committee** "Wallacean knowledge shortfall of mammals in the Central Corridor of the Atlantic Forest" (2021). Student: Inês Motta Comarella. Supervisor: Francisco Candido Cardoso Barreto. Co-supervision: Danielle de Oliveira Moreira. Instituton: Federal University of Espírito Santo, Brazil.
- **Final undergraduate committee** "Impacts on the food behavior of birds in the urban, semi-urban and rural environment in the municipal of Capanema, Pará" (2021). Student: Luana Gabriela Costa Bezerra. Supervisor: Breno Barros. Instituton: Federal Rural University of the Amazon, Brazil.
- **Graduate committee- master's qualifying examination** "Modeling species distribution of plant species as tool for assessing the impacts of climate changes and progress of Sustainable Development Goals (SDGs) 13 and 15 in Caatinga biome" (2021). Student: LUCAS PEIXOTO TEIXEIRA Supervisor: Marcelo Freire Moro. Instituton: Federal University of Cerá, Brazil.
- **Graduate monitoring committee- master's project** "Strategies for conservation of endemic and threatened species: Hindsia glabra K.Schum E Aosa uleana (Urb. Gilg) Weigend" (2020) Student: Bárbara Piovani Luz Aieta Afonso. Supervisor: Marinez Ferreira de Siqueira. Instituton: Botanical Garden of Rio de Janeiro, Brazil
- **Undergraduate monitoring committee** Seabird habitat use and its association of foraging with Guiana dolphin (Sotalia guianensis) in Sepetiba Bay (2018). Student: Leonardo Gomes Pacheco de Sá. Supervisor: Maria Alice dos Santos Alves. Co-supervisor: Rodrigo Hipolito Tardin Oliveira. Instituton: Federal University of Rio de Janeiro, Brazil.

Supervisions

- **Co-supervisor undergraduate.** Beta diversity of mountains altitudinal gradient in the State of Rio de Janeiro (2020- today). Student: Felipe Meira. Supervisor: Marinez Ferreira de Siqueira. Instituton: Pontifical Catholic University of Rio de Janeiro.
- **Internship supervisor, technical training.** Geographic Information System (GIS) (2019). Student: Tainá Cunha Udine Bernardino. Instituton: Federal University of Rio de Janeiro, Brazil.
- **Internship supervisor, technical training.** Geographic Information System (GIS) (2019). Student: João Pedro Sousa Cerqueira Cruz. Instituton: Federal University of Rio de Janeiro, Brazil.
- **Internship supervisor undergraduate.** Influence of the collection effort on the quantification of the terrestrial vertebrate richness in the Atlantic Forest (2018). Student: Caroline Vital da Solidade. Supervisor: Mariana Moncassim Vale. Instituton: Federal University of Rio de Janeiro, Brazil.

Science communication

- **Week curator at Biodiversity in Focus** Theme: Open tools and databases for analyzing biodiversity in space and time (2020).
  - Profile link
  - Repository URL

Tainá, 12th May 2021

Tainá Carreira da Rocha