

# Gustavo Brant Paterno

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## Visiting Professor

Restoration Ecology Chair | Technical University of Munich | 2020 |

## Summary

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Graduated in Ecology and trained as a plant ecologist with a master in ecology and PhD degree in evolutionary ecology. In the last two years has worked as a post-doctoral fellow conducting research on the evolution of sexual strategies in the angiosperms and developing a large-scale restoration experiment in the Atlantic Forest. Is an ambassador of the [Center for Open Science](#) and a member of the steering committee of the [Global Arid Zones Project](#) (a global synthesis of restoration initiatives in arid and semi-arid environments). Has great experience working in collaboration with international reserach projects, strong background in experimental ecology, evolutionary analysis, comparative studies and statistical programming in R. Has served as an assistant professor of Ecology at the Department of Botany, Ecology and Zoology at UFRN. Has experience in postgraduate teaching, including field ecology, statistics and evolution. Main areas of interest: Theoretical Ecology, Evolution, Applied Ecology, Restoration Ecology, Biodiversity and Ecosystem function and statistics.

## Education

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### PhD in Ecology

2014 - 2018

- *Departamento de Ecologia, Universidade Federal do Rio Grande do Norte (Brasil)*
- *Restoration Ecology Chair, Technische Universität München - TUM (Germany)*
- *Functional Ecology of Plants and Ecosystems, Vrije Universiteit Brussel (Belgium)*
- *Comparative Ecology Group, Macquarie Universit (Australia)*

- Thesis: Sex, herbivores and the evolution of flowers

### M.Sc. Ecology

2011 - 2013

- *Departamento de Ecologia, Universidade Federal do Rio Grande do Norte*

- Thesis: The role of nurse plants in the restoration of semiarid ecosystems

### B.Sc. Ecology

2005 - 2010

- *Universidade Federal do Rio Grande do Norte*

- Thesis: Species-specific facilitation, ontogenetic shifts and consequences for plant community succession

## Working Experience

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- Visiting Professor** 2020 - present  
*Technische Universität München - TUM, Germany*
- Postdoctoral fellow** 2019 - 2020  
*Universidade Federal do Rio Grande do Norte, Brasil*
- Research Topic: Sex, herbivores and the diversification of Angiosperms sexual strategies.  
**Prof. Carlos R. Fonseca.**
- Postdoctoral fellow** 2018 - 2019  
*Universidade Federal do Juiz de Fora, Brasil*
- Research Topic: Biodiversity-ecosystem function and Atlantic Forest restoration.  
**Prof. André Amado.**
- Visiting scholar** 2018 - 2018  
*Macquarie University, Australia*
- Comparative Ecology Group.  
**Prof. Mark Westoby.**
  - Research Topic: Global allometry of Angiosperm flowers
- Visiting scholar** 2017 - 2017  
*Vrije Universiteit Brussel - VUB, Belgium*
- Functional Ecology of Plants and Ecosystems.  
**Prof. Harry olde Venterink.**
  - Research Topic: Flower stoichiometry
- Visiting scholar** 2016 - 2016  
*Technische Universität München - TUM, Germany*
- Terrestrial Ecology Group. **Prof. Wolfgang Weisser.**
  - Research Topic: Flower sex allocation
- Visiting scholar** 2015 - 2015  
*Technische Universität München - TUM, Germany*
- Chair of Restoration Ecology.  
**Prof. Johannes Kollmann.**
  - Research Topic: Flower sex allocation

# Publications

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2020

- **Paterno, G. B.**, Carina L. Silveira, Johannes Kollmann, Mark Westoby, Carlos Roberto Fonseca. *The maleness of larger angiosperm flowers*. **Proceedings of the National Academy of Sciences**, 2020, 117 (20) 10921-10926 [[doi/data/code/osf](#)].
- David L. Röhr, Felipe Camurugi, **Paterno, G. B.**, Marcelo Gehara, Flora A. Juncá, Guilherme F. R. Álvares, Reuber A. Brandão, and Adrian A. Garda. *Variability in anuran advertisement call: A multi-level study with 15 species of monkey tree frogs (Anura: Phyllomedusidae)*. **Canadian Journal of Zoology**, 2020. [[doi/data/osf](#)].

2019

- Wolff, J. O., **Paterno, G. B.**, Liprandi, D., Ramírez, M. J., Bosia, F., Meijden, A., Michalik, P., Smith, H. M., Jones, B. R., Ravelo, A. M., Pugno, N., & Herberstein, M. E. (2019). *Evolution of aerial spider webs coincided with repeated structural optimization of silk anchorages*. **Evolution**, 73(10), 2122–2134. **(Cover article)** [[doi/data](#)].

2018

- **Paterno, G. B.**, Penone, C., & Werner, G. D. A. (2018). sensiPhy: An r-package for sensitivity analysis in phylogenetic comparative methods. **Methods in Ecology and Evolution**, 9(6), 1461–1467. [[doi/code](#)].

2016

- **Paterno, G. B.**, Siqueira Filho, J. A., & Ganade, G. (2016). Species-specific facilitation, ontogenetic shifts and consequences for plant community succession. **Journal of Vegetation Science**, 27(3), 606–615. [[doi](#)].
- Kollmann, J., S. T. Meyer, R. Bateman, T. Conradi, M. M. Gossner, M. de Souza Mendonça, G. W. Fernandes, J.-M. Hermann, C. Koch, S. C. Müller, Y. Oki, G. E. Overbeck, **G. B. Paterno**, M. F. Rosenfield, T. S. P. Toma, and W. W. Weisser. 2016. Integrating ecosystem functions into restoration ecology-recent advances and future directions. **Restoration Ecology** 24:722–730. [[doi](#)].
- Röhr, D. L., **G. B. Paterno**, F. Camurugi, F. A. Juncá, and A. A. Garda. 2016. Background noise as a selective pressure: stream-breeding anurans call at higher frequencies. **Organisms Diversity and Evolution** 16:269–273. [[doi/data](#)].

2015

- Garla, R. C., R. H. a. Freitas, J. F. Calado, **G. B. Paterno**, and A. R. Carvalho. 2015. Public awareness of the economic potential and threats to sharks of a tropical oceanic archipelago in the western South Atlantic. **Marine Policy** 60:128–133. [[doi](#)].

2010

- Loiola, M. I. B., **G. B. Paterno** and J. Apolinar. 2010. Leguminosae and Its Potencial of Use in the Rural Communities of São Miguel Do Gostoso – Rn. *Revista Caatinga* 23:59–70. [[doi](#)].

## In preparation

- **G. B. Paterno**, Harry olde Venterink, Carlos Roberto Fonseca. **The stoichiometry of flowers.** *in prep.*
- C. R. Fonseca, **G. B. Paterno**, M. M. Gossner, M. Brändle, W. Weisser, J. Kollmann and H. O. Venterink. **Sex, herbivores and flower evolution.** *in prep.*
- Carlos Roberto Fonseca, **Gustavo B. Paterno**, Demétrio L. Guadagnin, Eduardo M. Venticinque, Gerhard E. Overbeck, Gislene Ganade, Jean Paul Metzger, Johannes Kollmann, Johannes Sauer, Márcio Zikán Cardoso, Priscila F. M. Lopes, Rafael Oliveira, Valério D. Pillar, and Wolfgang W. Weisser. **Conservation biology: four decades of problem- and solution-based research.** *in prep.*
- Shackelford et al. **Global dryland restoration: patterns, lessons and future directions.** *in prep.*

## Teaching Experience

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### *Postgraduate teaching*

2020 - present

- Experimental Restoration Ecology  
*Restoration Ecology Chair, (TUM - Germany)*

### *Postgraduate teaching*

2018-2019

- Data management and Visualization with R  
*Departamento de Ecologia, UFRN - [link](#)*
- Methods in Field Ecology  
*PPG Ecologia UFJF & TUM - [link](#)*
- Evolutionary ecology and phylogenetic comparative analysis with R  
*Departamento de Ecologia, UFRN*
- Data analysis and Visualization in R  
*Departamento de Ecologia, UFJF*

### *Undergraduate teaching*

2013-2014

- Field Ecology | *Departamento de Ecologia, UFRN*
- Population Ecology | *Departamento de Ecologia, UFRN*
- Community Ecology | *Departamento de Ecologia, UFRN*
- Ecosystems Ecology | *Departamento de Ecologia, UFRN*
- Biological Conservation | *Departamento de Ecologia, UFRN*

## Mentoring

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### *Bachelor students*

2013 - 2014

- Jeanne Raquel Andrade Franco  
Research Topic: The role of herbaceous vegetation on the restoration of Caatinga drylands

### *Master students*

2019 - 2020

- Maxi Siefert  
Research Topic: The effect of abandoned pasture on tree regeneration in the Atlantic Forest

### *PhD students*

2018 - present

- Jeanne Raquel Andrade Franco  
Research Topic: Species diversity and ecological interactions on the restoration of semi-arid ecosystems

## Software

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### *sensiPhy*

The *sensiPhy* R package provides simple functions to perform sensitivity analyses in phylogenetic comparative methods. It uses several simulation methods to estimate the impact of different types of uncertainty on Phylogenetic comparative methods.

- Github Page: <https://github.com/paternogbc/sensiPhy>
- Online tutorial: <https://github.com/paternogbc/sensiPhy/wiki>

### *SSregression*

This interactive application allows you to explore how Sums of Squares are calculated in simple linear regressions. Change one of the parameters to see what happens.

- Github Page: <https://github.com/paternogbc/SSregression>
- See application page: [https://paternogbc.shinyapps.io/SS\\_regression/](https://paternogbc.shinyapps.io/SS_regression/)

### *Weasel*

Simulate the evolution of digital individuals (An implementation of Richard Dawkins Weasel algorithm). The Weasel Algorithm was developed by Richard Dawkins to demonstrate how random variation combined with non-random cumulative selection can drive evolutionary change.

- Github Page: <https://github.com/paternogbc/weasel>

### *covidbr19*

The goal of *covid19br* is to provide a permanent repository with data and the entire history of corona virus cases in Brazil.

- Github Page: <https://github.com/paternogbc/covid19br>
- See application page: [https://paternogbc.github.io/covid19br/articles/en\\_current\\_trends.html](https://paternogbc.github.io/covid19br/articles/en_current_trends.html)

## Open datasets

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- **FlowerSex**: A Global Dataset of flower biomass partition (307 sp).
- **Anura**: A Global Dataset of Anuran Species Advertisement Call (509 sp).
- **Spiders**: Web traits for species covering all major clades of the modern spiders (105 sp).
- **Phyllomedusidae**: Variability in anuran advertisement call of monkey tree frogs (15 sp).

## Web development

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- **Methods in Field Ecology**: <https://methods-field-ecology.netlify.com/>
- **Gustavo Paterno**: <https://gustavopaterno.com/>
- **Laboratório de restauração**: <https://lerufrn.wixsite.com/restauracao>
- **Blog R-Aprendiz**: <https://raprendiz.wordpress.com/>

## Reviewer

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I am currently a reviewer for the following journals

- **Plant and Soil**
- **Ecosphere**

## Awards and Scholarships

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### *Awards*

- Best master thesis in Ecology (UFRN) 2013
- Best PhD thesis in Ecology (UFRN) 2018

### *Scholarships and grants*

- Bachelor Scientific Initiation scholarship [CNPQ - Brazil] 2005-2010
- Master scholarship [CNPQ - Brazil] 2011-2013
- PhD scholarship [CAPES - Brazil] 2014-2018
- Visiting scholar [TUMBRA/DAAD - Germany] 2014-2014
- Visiting scholar [TUMBRA/DAAD - Germany] 2015-2015
- Postdoctoral grant [CAPES - Brazil] 2018-2019
- Postdoctoral grant [CNPQ - Brazil] 2019-2020