

# Juan Pablo Benavides Tocarruncho



**PROFILE** I am a biologist, MSc in data science with leadership experience, data analysis and research passionate. Currently conducting doctoral research in Tropical Savannas. I was a coordinator of a restoration group and an assistant in ecological field projects. Dedicated to learning, teaching, and striving to do cutting-edge research and spread knowledge about biodiversity and tropical ecosystems.

## ACHIEVEMENTS

- I recently completed my master's in Applied Data Science, where I developed machine learning and AI skills using diverse social and environmental datasets to build models such as neural networks, image analysis and remote sensing. For my dissertation, I calibrated model parameters for an Andean forest in Colombia to investigate its resilience to different disturbances. Some module projects are available on github.
- I published my undergraduate thesis results about root functional traits with the research group of Beatriz Salgado-Negret, which were also presented as posters and symposium presentations in the ATBC meeting 2022 and Ecological Restoration Congress 2023. Other projects in collaboration with the research group are also published.
- I was part of the coordination team of the ecological restoration group "Greunal" at the National University of Colombia (UNAL) developing educational projects in campus, in schools in Bogota and Boyaca, designing ecological restoration plans and monitoring an experimental plot.
- I did scientific dissemination of Greunal projects results via Social media (Instagram), published material and organizing a symposium during the Ecological Restoration Congress 2023.
- I have worked as ecological consultant for INGETEC S.A.S where I participate in the Environmental Impact Assessment of a Transmission line project, doing landscape analysis of fragmentation and connectivity.

## RESEARCH AND PROJECTS

**HUMBOLDT INSTITUTE** Research assistant - Fieldwork |FoRCE tropical forest dynamics  
January 2023 | Boyaca - Colombia

The goal was establishing plots in tropical rain forest to compare tree biomass over liana abundance.

- Plot establishment and individuals survey
- Identification of plant species
- Data base construction

**UNIVERSITY OF MICHIGAN** Research assistant - Fieldwork | Defining Functional Strategies of Trees  
August 2022 - October 2022 | Magdalena, Bolivar, Antioquia, Tolima - Colombia

The main goal was to establish plots in 4 tropical dry forests to compare the performance of the tree seedlings and the functional traits that underlie it. The field results are published.

- Soil and seedling sampling
- Sample processing (functional traits measurements)
- Identification of plant species
- Monitoring of permanent plots
- Provide compiled dataset for further analysis

**UNIVERSIDAD NACIONAL DE COLOMBIA - NATURA FOUNDATION** Research assistant | Project  
"Como Optimizar los esfuerzos de restauración en el bosque seco tropical"  
April 2021 - August 2022 | Bogotá, Garzón (Huila) - Colombia

The aim was to understand how plants roots traits affect soil physical and hydraulic properties after simultaneous plantation.

- Soil and vegetation sampling
- Laboratory sample processing (soil analysis and functional traits)
- Data analysis and data base organization

- Presentation and publication of results at symposiums and conferences (ATBC meeting 2022, Journal of Tropical Ecology, 2024)

## ECOLOGICAL RESTORATION GROUP OF THE NATIONAL UNIVERSITY OF COLOMBIA (GREUNAL)

Student project "Una villa restaurada". Ecological restoration in the San Marcos Hill in Villa de Leyva  
2020 | Villa de Leyva, Boyacá, Colombia

The project aim was to follow the progress with the experimental plot in the St. Marcos Hill and enrich the plot with indigenous plants with the help of students from the Antonio Nariño high school. - (500 USD grant)

Student project "Restaura con Greunal". Scientific dissemination of ecological restoration.  
2021 | Bogotá, Colombia

Compilation of work from the experimental plot of Villa de Leyva. Published in the first issue of the "Capsulas de restauración" (Ruiz-Marín et al. 2021), disseminated across social media, in person and online workshops and also in events and posters. - (500 USD grant)

Student project "ABC de Restauración". Application of community restoration in high Andean ecosystems.  
2022 | Cundinamarca, Colombia

Workshops about ecological restoration and designing a restoration project based on community work and ecological surveys. Documented in the second issue of "Cápsulas de Restauración" (Benavides-Tocarruncho et al. 2023). - (500 USD grant)

## PUBLICATIONS

Williams, P.J., Zipkin, E.F., González-Melo, A., Salgado-Negret, B., González-M., R., Norden, N., Benavides-Tocarruncho, J.P., Cely, J.M., Ferrer, J.A., García-Villalobos, D., Garzón, F., Idárraga-Piedrahita, Á., López-Camacho, R., Moreno, E., Nieto, J., Pizano, C., Puentes-Marín, J., Pulido, N., Rivera, K., Rojas-Bautista, F., Salinas, V., Solorzano, J.F. and Umaña, M.N. (2026), Ontogenetic shifts in wood anatomy and leaf traits in tropical dry forests. *New Phytol*, 249: 848-859. doi:10.1111/nph.70725

González-Melo, A., Salgado-Negret, B., Norden, N., González-M, R., Benavides, J.P., Cely, J.M., Abad Ferrer, J., Idárraga, Á., Moreno, E., Pizano, C., Puentes-Marín, J., Pulido, N., Rivera, K., Rojas-Bautista, F., Solorzano, J.F. and Umaña, M.N. (2025), Linking seedling wood anatomical trade-offs with drought and seedling growth and survival in tropical dry forests. *New Phytol*, 245: 117-129. doi:10.1111/nph.20222

Puentes-Marín, J., González-Melo, A., Salgado-Negret, B., González-M, R., Abad Ferrer, J., Benavides, J. P., Cely, J. M., Idárraga-Piedrahita, Á., Moreno, E., Pizano, C., Pulido, N., Rivera, K., Rojas-Bautista, F., Solorzano, J. F., & Umaña, M. N. (2024). Wood Anatomical and Demographic Similarities Between Self-Standing Liana and Tree Seedlings in Tropical Dry Forests of Colombia. *Plants*, 13(21), 3023. doi:10.3390/plants13213023

Benavides-Tocarruncho, J. P., Paz, H., Rodríguez, N., Arrieta, R., Pizano, C., and Salgado-Negret, B. (2024). Belowground differentiation among trees in a degraded tropical dry forest landscape: no evidence of a collaboration gradient. *Journal of Tropical Ecology*, 40, e15. doi:10.1017/S0266467424000129.

Benavides-Tocarruncho J. P. Diaz et al. (Eds.) (2023) Cápsulas de Restauración Ecológica: Experiencias locales en Cundinamarca y Boyacá. Universidad Nacional de Colombia. 2nd Issue. Digital ISSN 2806-0504.

Ruiz-Marín, E., Benavides-Tocarruncho J. P. y Mongui-Vallejo, M. F. (Eds.). (2021) Cápsulas de Restauración Ecológica: El cerro San Marcos de Villa de Leyva. Universidad Nacional de Colombia. 1st Issue. Digital ISSN 2806-0504.

## EXPERIENCE

**INGETEC INGENIERIA & DISEÑO S.A.S** Professional assistance | Ecology department  
April 2023 – August 2023 | Bogota, Colombia

Environmental Impact Assessment in the project "LÍNEA TRANSMISIÓN 230 KV CONEXIÓN PARQUES SOLARES ANDES A SUBESTACIÓN SOGAMOSO - RENOVATIO"

- Interpretation of land cover according to the Corine Land Cover National Legend
- Analysis of fragmentation and connectivity. Preparation of a biotic characterization report for an environmental impact assessment study
- Management of geographic databases (GDB) following the ANLA methodology for environmental studies
- Environmental impact assessment - Alteration of terrestrial ecosystems
- Environmental management plans design - Management of terrestrial ecosystems and analysis of priority areas for the rehabilitation of connectivity in watercourse surroundings

- Monitoring and follow-up plans design - terrestrial ecosystems
- Characterization of Ecosystem Services - Analysis of trends and impacts on Ecosystem Services

**MOMO ASOCIADOS** Language teacher - Part time | Portuguese course

September 2020 – June 2022 | Online mode

- Instructor of telepresence classes in the Portuguese language, at basic, intermediate, and advanced levels.

## EDUCATION

**UNIVERSIDAD NACIONAL DE COLOMBIA** Bachelor of Science in Biology

2017-2022 | Bogotá, Colombia

Fee waiver for undergraduate studies (2017-2019)

Grade point average: 4.4 / 5.0

**UNIVERSITY OF EXETER** Master of Science in Applied Data Science (Ecology and Evolution)

2023-2024 | Penryn, Cornwall, United Kingdom

Student representative for the postgraduate programs in Applied Data Science (Department of Mathematics).

Colfuturo-Ayudar Scholarship.

Grade Distinction

**UNIVERSITY OF EXETER** PhD Physical Geography

2024-2028 | Exeter, Devon, United Kingdom

NERC GW4+ Doctoral Training Partnership

## LANGUAGES

- English, C1 (IILETS - 2023)
- Portuguese, B2 (CELPE-Bras - 2022)
- Spanish, native

## AWARDS

2016	Universidad nacional de Colombia	Third place Olimpiadas de Quimica
2020	Universidad nacional de Colombia	First place in the Expresa3 contest