

Cristina Barber

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RESEARCH POSITIONS

- 2021
-present
- Research Associate at Dr. Richar Kobe lab
Department of Forestry in Michigan State University
 - Large environmental data bases management (Climate and plant vital rates)
 - Data analysis and modeling
 - Management of data collection in Costa Rica in La selva Biological Station
- summer
2018 &
2019
- Fieldwork leader- Ph.D. Dissertation
Boise State University
 - Geolocation and measuring of five dominant species of the Panamanian dry tropical forest using a GIS and a GPS.
 - Surveys of farmers about their land management preferences by species.
- 2016
- Intern- Dr. Jefferson S. Hall
Smithsonian Tropical Research Institute.
 - Measuring and identifying all trees, bushes, and lianas of the Panamanian dry and humid tropical forest.
 - Sap flow and fitter fall measurements on Panamanian native species.
 - Hydrological measurements in the area Agua Salud.
- 2015
- Research Assitant- Dr. Marlene Soriano
Bolivian Forest Research Institute.
 - Measuring and identification of 18 timber and on-timber forest products species in the Bolivian Amazon.
 - Volunteer data collection
 - Measuring of physical characteristics of *Buteo regalis* and *Tyto alba*.
 - Traping of *Artemisa tridentata* seeds.

EDUCATION

- 2021
-2017
- Ph.D., Ecology, Evolution and Behavior (EEB)
Boise State University (BSU)
Advisor: Dr. T.Trevor Caughlin
Dissertation: “Scaling up population dynamics of tropical forest trees in a reforesting landscape”
Forest Landscape Restoration (FLR) projects could benefit from the cost-efficiency and the ecosystem services provided by natural regeneration. Uncertainty on where natural regeneration will happen is currently an obstacle to the use of natural regeneration in FLR projects. This dissertation combines high-spatial resolution remote sensing with field data to predict population dynamics of naturally regenerating species at the landscape scale.
- 2016
-2014
- M.Sc, Forest and Nature Conservation
Wageningen University & Research Center (WUR)
Advisors: Dr. Marielos Peña, Dr. Pieter Zuidema and Dr. Marlene Soriano
Dissertation: “Population dynamics of *Bertholletia Excelsa*: Response to logging and Brazil nut harvesting”
Bertholletia Excelsa is a precious non-timber forest products species considered vulnerable by the IUCN. We assessed the effect of two significant disturbances that could be affecting the *Bertholletia Excelsa* population, Brazil nut harvesting (NTFP) and timber logging, on the population dynamics of *Bertholletia Excelsa* using a matrix population model.
- 2014
-2010
- B.Sc., Environment
Universidad Autónoma de Madrid (UAM).
Advisors: Dr. José Antonio González Novoa, Dr. Berta Martín López and Dr. Elisa Oteros Rozas.
Thesis: “Economic valuation of the Ecosystem services provided by forest in the Mediterranean basin: A systematic review”

PUBLICATIONS

Peer-review

1. **Barber, C.**; Graves, S. J.; Hall, J. S.; Zuidema P. A.; Brandt, J. ; Bohlman, S. A.; Asner, G. P. ; Bailón M.; Caughlin T. T. Species-specific tree crown maps and land ownership data improve predictions of tree species recruitment in a tropical agricultural landscape. Ecological Applications.
2. Soriano, M; Zuidema, P. A.; Barber, C; Mohren, F; Ascarrunz, N; Licona, J.C.; and Peña-Claros, M. (2021) Commercial Logging of Timber Species Enhances Amazon (Brazil) Nut Populations: Insights from Bolivian Managed Forests. Forests 12 (8): 1059. <https://doi.org/10.3390/f12081059>.
3. Hudon, S; Zaiats, A; Roser, A ; Roopsind, A; **Barber, C**; Robb, B; Pendleton, B; Camp, M; Clark, P; Davidson, M; Frankel-Bricker, J; Fremgen-Tarantino, M; Forbey, J; Hayden, E; Richards, L; Rodriguez, O; Caughlin, T.T. (2021)Unifying community detection across scales from genomes to landscapes. Oikos.
4. Caughlin, T. T.;**C. Barber**; G. P. Asner; N. F. Glenn; S. A. Bohlman; and C. H. Wilson (2020). Monitoring tropical forest succession at landscape scales despite uncertainty in Landsat time series. Ecological Applications.

LANGUAGES

Saying hello
world

Native

Spanish

English

PROGRAMMING LANGUAGES

R

STAN

Python

Google Earth Engine

Matlab

Bash

Submitted manuscripts (available upon request)

5. Vasquez, V.; **Barber,C.**;Dguidegue, Y.; Caughlin, T.T. ; Garcia, R.; Metzel, R. Farmer Perceptions of Tropical Dry Forest Restoration Practices on the Azuero Peninsula of Panama -Implications for Increasing Biodiversity in a Human-Dominated Landscape in Montagnin, F Biodiversity Islands: Strategies for Conservation in Human Dominated Environments. Springer.

6. Lorealee Larios; , Lars A. Brudvig; T. Trevor Caughlin [and 43 others, including **Barber, C.**]. A reading list of foundational papers for restoration ecologists. Restoration Ecology.

In preparation

7. **Barber,C**; Zaiats A.; Applestein,C. and Caughlin T.T. Plants Neighborhood Dynamics Using Bayesian Methods And Modeling. Target journal: Methods in Ecology and Evolution (MEE)

8. **Barber,C**; Graves, S. J.; Hall, J. S.; Cruz, J.; Vasquez, V.; Vermissen, Q.; Carignan, A.; Bohlman, S. A.; Asner, G. P. C; Caughlin T. T. Predicting individual trees mortality at landscape scale using high-resolution remote sensing and field data. Target journal: Journal of Applied Ecology.

Non-per review publications

9. **Barber,C**; Zaiats A.; Applestein,C. and Caughlin T.T. Spatial models for plant neighborhood dynamics in Stan. Stan Case Studies. [Link](#).

ACADEMIC AWARDS, GRANTS, AND SCHOLARSHIPS

2021 • Seed grant- GEM3, EPSCOR (*Co-PI and worte more than 3/4 of the grant*): Increasing diversity in STEM using mentoring and research opportunities, and science dissemination in Spanish - Requested:30,000.

2020 • Travel Grant- Biology department, Boise State University (BSU).

2019 • Travel Grant- Biology department Boise State University (BSU).

2018 • STRI Short-term fellowship- Smithsonian Tropical Research Institute (STRI).

2018 • Travel Grant- German Centre for Integrative Biodiversity Research (iDiv).

2018 • Travel Grant- NERC, Oxford University and Sheffield University.

ORAL PRESENTATIONS AND POSTERS

2021 • Presentation at OIKOS 2021. Predicting landscape-scale natural tree recruitment in tropical agricultural landscapes: the value of species-specific tree crown maps and land ownership data

2020 • Presentation at the StanCon 2020 in a selection of 22 presentations. The StanCon is a global event about innovative uses of Stan for Bayesian modeling. Spatial models for plant neighborhood dynamics in Stan. [Video](#).

2020 • Presentation at the ISEC 2020. A Bayesian framework to link remote sensing and field data to predict natural regeneration at the landscape scale. [Video](#).

2020 • Invited speaker and poster at the GEM3 Annual conference. Communicating Science in Spanish to Diverse Audiences.

2019 • Presentation at the US-IALE 2019. Scaling-up restoration: Modelling recruitment from inventory data to thousands of hectares.

2018 • Poster at the Biology Department, Graduate Student Symposium. Scaling up population dynamics of tropical forest trees in a reforesting landscape.

PUBLIC ENGAGEMENT

present-2020 • SCIENTIA: Communicating STEM Research in Languages other than English
Boise State University (BSU) Boise, USA
Team member and co-creator of the Spanish Translation GEM3, an initiative that seeks to increase diversity, equity, and inclusivity (DEI) in STEM by sharing research findings with a broader Spanish-speaking audience. [Link](#).

2020 • 3 Minutes Thesis competition at Boise State - 3rd place. [Video](#).

2020 • Invited speaker at the Summer Research Community (SRC) Ten Talks Session at Boise State University. Predicting on behalf of cost-efficiency.

TEACHING AND MENTORING

- 2018-2017 • Teaching Assistant. Boise State University
Biology II: Diversity of life.
- Workshop- For loops and functions in R. UseR Group; Boise State University
- 2021 • Workshop- Forest restoration practices. Fundación Probioma and Instituto Boliviano de Investigación Forestal
- Graduate students
- 2019-2018 • Quinten Vermissen. Wageningen University & Research Center (WUR) Wageningen, NL
Co-mentoring with Dr. Pieter Zuidema on the Master's Thesis "The effect of riparian areas and cattle ranching on the vital rates of tree recruits."
- Undergraduate students
- summer 2020 • Valeria Montelongo, Mayra de Anda Hernandez, Mary Guillen, Maria Nieto and Karen Hernandez. Boise State University. Mentoring students from the project SCIENTIA to translate science into Spanish and disseminate it to a broad audience. The project's objective is to increase diversity, inclusion, and equity (DEI) in STEM. [Link](#).
- spring 2021 • Alyssa Molis. Boise State University (BSU)
Mentoring in a Vertically Integrated Project (VIP) exploring remote sensing applications to ecology and collected data on tree mortality.
- summer 2020 • Yuliana Cisneros, Ismenia Gallegos, Siomara Escobar. Boise State University
Mentoring students from the project SCIENTIA to translate science into Spanish and disseminate it to a broad audience. The project's objective is to increase diversity, inclusion, and equity (DEI) in STEM. [Link](#).
- 2020-2019 • Vicente Vasquez. University of the Ozarks
Co-mentoring with M.Sc. Ruth Metzel on the manuscript- Farmer Perceptions of Tropical Dry Forest Restoration Practices on the Azuero Peninsula of Panama "Implications for Increasing Biodiversity in a Human-Dominated Landscape."
- 2020-2019 • Aaron Carignan. Boise State University (BSU)
Mentoring in a Vertically Integrated Project (VIP) exploring remote sensing applications to ecology and collected data on tree mortality.

COMMITTEES, GROUPS MEMBERSHIPS AND SERVICE

- present-2018 • Ecological research association (ERA) at Boise State University (BSU). Co-funder, vice-president in 2020-2021, and financial officer from 2018 to 2020.
- 2021-2019 • WWF reforestation grant selection committee. Grant review and selection to fund reforestation projects in tropical areas.
- 2019 • Student representative in a faculty hires search committee, for a quantitative ecologist position. Boise State University, Biology department.
- 2021-2018 • UseR! Group; R programming language. Boise State University.
- Journal reviewer for Oecología and Journal of Ecology.

ATTENDED WORKSHOPS AND COURSES

- 2021 • Software Carpentries Instructor Training (Certification to teach programming languages).
- 2018 • Ecological Theory and Modelling for the Biodiversity Crisis.
Instructors – Prof. Henrique Pereira, Dr. Aurora Torres, Dr. Isabel Rosa, Dr. Carlos Guerra and Dr. Anne Mimet.
Institution- iDvi Summer School 2018.
- 2018 • Stage-based demographic models in ecology, evolution and conservation biology.
Instructors – Dr. Rob Salguero, Dr. Iain Stott, Dr. Dylan Childs, Prof Steve Ellner, Dr Eelke Jøgejans and Prof Mark Rees.
Institutions- NERC, Oxford University and Sheffield University.
- 2018 • Software carpentry on R, python and cluster.
- 2018 • Advanced Earth Engine topics.
- 2018 • A hands-on introduction to Google Earth Engine.
- 2016 • ESRI certification: ArcGIS Desktop I, Getting Started with ArcMap.