Cristina Barber

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EDUCATION

present -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"

RESEARCH EXPERIENCE

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.

PUBLICATIONS

Peer-review

1. 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.

2. Caughlin, T. T.;**C. Barber**; G. P. Asner; N. F. Glenn; S. A. Bohlman; and C. H. Wilson (2020). Mon itoring tropical forest succession at landscape scales despite uncertainty in Landsat time series. Ecological Applications.

Submitted manuscripts (available upon request)

3. **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.

4. 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.

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

LANGUAGES

Saying hello world — *Native*

Spanish

English

PROGRAMMING LANGUAGES

R

STAN

GEE

Phyton

Matlab

Bash

In preparation

6. **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)

7. **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.

Other non-per review publications

8. **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

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.

Submitted

2021 Seed grant- GEM3, EPSCOR

ORAL PRESENTATIONS AND POSTERS

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.

2018 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 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 Jogejans 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.