

My research in La Selva: Seed Rain–Successional Feedbacks in Wet Tropical Forests

(Alwyn Gentry Award 2021, Association for Tropical Biology and Conservation)

By Nohemi Huanca Nunez

Much of the original global extent of tropical forests has been lost to deforestation (FAO, 2018), caused by many processes such as fires and conversion to agricultural use. Of all the important processes required for the regeneration of these forests, seed dispersal is a key process that will establish the initial template of the tree composition in the regenerating forests and the animals that will depend on them. At my talk in the Association for Tropical Biology and Conservation (ATBC) 2021 conference, I introduced the concept of seed rain–successional feedbacks as a deterministic process in which the seed rain is shaped by successional dynamics internal to a forest site and that acts to reinforce priority effects. As a result, seed rain–successional feedbacks may generate higher landscape-scale beta diversity by increasing the heterogeneity of species composition in successional forest fragments (Huanca-Nunez et al., 2021). Thanks to this presentation, I was honored to receive the Alwyn Gentry Award by the ATBC for best student oral presentation.

This research about seed rain dynamics is part of my Ph.D. dissertation, which aims to offer a comprehensive view of secondary forest regeneration and diversity in Costa Rican wet forests, covering four key areas: seed dispersal, plant-animal interactions, negative density dependence, and how below and aboveground functional traits of seedlings affect their establishment in these regenerating forests. This research would not have been possible without the support of the Organization for Tropical Studies (OTS) and all the facilities provided at La Selva Biological Station.



Nohemi Huanca Nunez during her fieldwork at La Selva and part of the field crew: Jeannette Paniagua, and Enrique Salicetti.
Photo credits: Bernal Paniagua

As many OTS eCanopy newsletter readers, I have long been amazed by the diversity, complexity, and beauty of tropical forests. As a young student, I was always interested in seeking out learning opportunities, and the OTS courses were on top of my to-do list. With the support of my research advisor, Dr. Sabrina E. Russo, I was fortunate to have the opportunity to be part of the OTS Tropical Biology: An Ecological Approach summer course, and later I obtained the OTS Post-Course Research Fellowship and the OTS Graduate Research Fellowship. These fellowships were essential in the development of my research.

As a Latina student with limited economic resources and few research grant opportunities that are not contingent on US citizenship, the OTS allowed me to freely design and set up my varied research questions. So, I decided to focus on different aspects of the regeneration of secondary forests; I worked collecting seeds, installing paired seedling subplots, one that excluded large mammals and one that did not, monitoring seedlings' survival and growth, gathering above and belowground seedlings' functional traits. Since La Selva is a long-term research facility, I also

had the opportunity of using long-term data. Specifically, I was thrilled to collaborate with Dr. Robin Chazdon, work at her research sites in La Selva and be able also to use her long-term data. I had multiple field seasons at La Selva for the different parts of my research, and I feel grateful to have had OTS facilities at each of them. For example, I worked identifying seeds to the species level. For this task, it was fundamental to use their herbarium and the help of their experts such as Orlando Vargas. I was also lucky to work with long-time La Selva field research assistants Enrique Salicetti, Jeannette, and Bernal Paniagua. Furthermore, since OTS covered a large portion of my research activities, I was able to use other research funds to bring other Latino students as research assistants and give them the opportunity to experience and enjoy research in La Selva, where you can learn and discuss research ideas with many new and experienced researchers doing science at the same site.

I want to thank all the OTS supporters for giving young researchers like me the opportunity to do science and encourage readers of this newsletter to donate if you are able. I have received a great opportunity from OTS, and this is why I decided to donate for the first time last year. My donation was not much, but I believe it will help a bit in two important areas: 1) contribute to the development of new tropical researchers, and 2) support research focused on solving important, diverse, and urgent ecological questions. In my case, the fellowships allowed me to contribute to explaining how ecological processes in human-modified landscapes change through regeneration, which I believe will contribute to the long-term goal of developing improved ecological restoration and reforestation plans. I am very much looking forward to reading more of the exciting discoveries and contributions of the future OTS research fellows.

If you would like to watch the talk I gave at the 2021 Virtual ATBC conference, you can find it at this link: <https://youtu.be/fqRZzLhAYqM>

If you want to know more about my research, you can find me at <https://nohemihuanca.github.io>

Literature Cited

FAO (Ed.). 2018. Building climate resilience for food security and nutrition. FAO, Rome, Italy.