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Wednesday, April 12, 2023

IVETTE PERFECTO

UNIVERSITY OF MICHIGAN

https://www.ivetteperfectolab.com/ivette-perfecto

Ivette Perfecto is the James E. Crowfoot Professor of Environmental Justice at the School for Environment and Sustainability at the University of Michigan. Perfecto has more than 35 years of experience working on issues of agriculture and the environment. Her research focuses on agroecology, biodiversity and ecosystem services in agricultural landscapes with an emphasis on agroforestry systems of Mexico and Puerto Rico, where she was born. She is an elected Senior Fellow of the American Association for the Advancement of Science, a Senior Fellow of the Ecological Society of America and a Senior Fellow of the Michigan Society of Fellows. Perfecto was elected to the U.S. National Academy of Sciences in 2022. She has been a member of the New World Agriculture and Ecology Group and Science for the People for over 30 years.

Intransitivity as a dynamic assembly engine of competitive communities: evidence from the ant community in coffee agroforestry systems in Puerto Rico

The question of species coexistence in ecological communities has intrigued ecologists since before Darwin. Historically, ecological communities dominated by competitive interactions have been assumed to exhibit transitive competition, that is, a hierarchy of competitive strength from most dominant to most submissive. But, in the extreme, the logical conclusion of that assumption is that the community will collapse into a single dominant species. However, that is not what we see in nature. In this talk, I tackle this question by proposing that intransitive competition (like the rock-paper-scissors game) is a mechanism that promotes coexistence in ant communities, thought to be highly competitive communities. We first present evidence for an intransitive loop of three dominant species in coffee farms in Puerto Rico and then analyze two models that could promote species richness: 1) the connection between an intransitive loop and a transitive hierarchy, and 2) the connection of an intransitive loop and a predator-prey system with a higher order effect. We then discuss the implications for pest control of this intransitivity.

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