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Title: The economic potential of fruit trees and the abundance, foraging ecology and performance of birds along precipitation and shade gradients in Blue Mountain coffee agroecosystems, Jamaica W.I.

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ABSTRACT

Although many studies have touted the conservation value of coffee agroecosystems for migratory and resident birds, gaps do still exist in our knowledge about the suitability for birds and economic benefit of fruit trees as shade in coffee agroecosystem. In this study I examine the habitat specific abundance, foraging ecology and performance of birds as well as the economic benefit of fruit trees as shade in coffee agroecosystems in the Jamaica. Research was conducted on six shade coffee plots and in adjacent forests habitats in two distinct rainfall zones within the Yallahs River valley on the south-eastern slopes of the Blue Mountains, Jamaica. While shade coffee had higher or similar abundance of many bird species groups like granivores and frugivores to that of adjacent forest habitats, ecologically sensitive groups like forest restricted species were more abundant in adjacent forest habitats. Understory insectivorous and omnivorous bird species also exploited the shade canopy more than the coffee trees for arthropod and nectar resources it provided. Results also suggest that rainfall, which influences arthropod biomass and quality but not quantity of shade are important to ensure birds maintain overwinter body condition, depart early on migration, and return the following season. Results of the farmer survey suggests that farmers can reap additional economic rewards from fruit trees being utilized for shade on coffee farms, with better management and marketing of shade tree products. Overall, this work suggests that although rainfall influences arthropod food for birds along the rainfall gradient, optimizing the shade diversity where rainfall is low can benefit the bird community and coffee farmers.