

Post-hurricane vegetation and ecosystem services loss in urban residential yards of San Juan, Puerto Rico

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ABSTRACT

The long-term objectives of this study aimed at evaluating changes in ecosystem services following Hurricane Maria and potential disservices provided by urban trees in residential backyards in San Juan, Puerto Rico. Residential land use cover in San Juan is considerable and suggests that these spaces can provide important ecosystem services for city-wide climate change adaptation and mitigation. The work took advantage of ongoing studies by the San Juan Urban Long-Term knowledge-action network within the Río Piedras watershed to conduct a rapid assessment that would reflect severity and type of damages suffered by trees and consequent potential ecosystem services loss. We revisited 69 residential yards where we had conducted complete pre-hurricane i-Tree Eco inventories to document the immediate impacts of these events on yard vegetation and the implications of these changes to the provision of urban ecosystem services. Results showed a 27% reduction of tree stems (N=134) which translated into a reduction of approximately 34% in air pollution reduction services, 40% of avoided runoff and 26% energy savings with an estimated cost for vegetation replacement of \$85,559 for the combined single-family housing units. Vegetation changes following extreme atmospheric events could have important implications for urban resilience.

BIOGRAPHY

Sofia Olivero Lora is a Ph.D. Candidate in Environmental Sciences at the University of Puerto Rico in Río Piedras. Her research and work experience has been interdisciplinary in nature and focused on Central America and the Caribbean. Her dissertation evaluates residential yards of San Juan, Puerto Rico, as social-ecological systems. Her work includes studies of preferences and perception of residents towards urban residential vegetation, their related ecosystem services and disservices. Urban residential vegetation and their associated ecosystem services is also addressed in the context of extreme weather events and from the perspective of the advantages and limitations that assessment tools such as i-Tree Eco could play in long term urban planning.