

ABSTRACT

Identification, Assessment and Valuation of Pollination Services in Neotropical Agricultural Landscapes, Trinidad W.I.

Lena Dempewolf

Ecosystem services are not factored into any policy planning frameworks in the Caribbean, or accounted for with respect to their abundance, distribution or worth. Subsequently, their contribution to national and global Gross Domestic Product (GDP) is underestimated, resulting in their rapid depletion, degradation and loss of resources and capital. The current reactive approach to resource and natural capital management provides insufficient tools for planning and management. Pollination is threatened globally. As the current extent of service provision within Trinidad is unknown and the need for food production and security is increasing with a steadily increasing population, an urgent need for the incorporation of pollination into national planning becomes evident. The overriding objective of this thesis is to demonstrate that pollination can be effectively assessed in the small island Caribbean context for the purpose of national planning through the identification of insect pollinators for crops of high importance, the assessment of potential drivers for pollinator presence at the farm scale, simple valuations and the determination of the knowledge, attitudes and practices of farmers. Experiments conducted across six sites in Trinidad underscored the wide distribution and contribution made by *Apis mellifera* bees, as well as a range of wild pollinators and their preferences for particular time intervals, flower location and flower sex. Complete pollinator absence led to substantial yield losses for farmers - 96.5% of cucumbers, 88.1% of hot peppers and 86.2% of okras. Despite the potential large scale national losses in the event of complete pollinator absence, farmers were largely unaware of the term 'pollinator' and the level of influence that they possess over the presence of these beneficial organisms on their farms. Current farming practices are not designed to maximise pollinator presence. It is hoped that this research will initiate further work and its collective inclusion into local planning initiatives.

Keywords: pollination; ecosystem services; valuation; physical accounting; ecosystem service drivers; national planning