

Title of the symposium:

Biodiversity spillover in fragmented landscapes and effects on ecosystem services provision and regulation

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Responsible

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Symposium abstract

Summary: The cross-habitat spillover - which encompasses the exchange of organisms or materials between different habitat types, including both dispersal and foraging movements - is an important biological process in anthropogenic landscapes. This ecological process may proceed in both directions, from native habitat to managed matrix, or from managed matrix to native habitat. Spillover from areas of native habitat into managed matrix is expected to be common, as native vegetation often acts as a source of individuals that can disperse into recipient managed systems and it is often associated to ES provision. Both inter-habitat matrix and landscape configuration can influence spillover by controlling organismal ability to disperse, and affecting the provision of additional or supplementary resources that impact organism survival. The organismal cross-habitat spillover is often associated to positive impacts on different ES - such as pollination and pest control- given that both depend on biological fluxes connecting source areas (supply areas) and demand areas (where the service is provided). For example, the spillover of natural enemies (such as ants and birds) into coffee plantations is often associated to positive impacts on coffee-borer beetle control. Moreover, the presence of native habitat remnants along crop fields is also associated to increased spillover of pollinators and to substantial increase on pollination rates.

However, the organismal spillover may also have negative impacts once it can be considered as an event in which a pathogen from one species moves into another species. Such movements can result in different devastating diseases outbreaks. For disease regulation, some studies have demonstrated that a patchy pattern of forest fragments embedded in an agricultural matrix is often associated to an increased incidence of some diseases, given that the majority of emerging infectious diseases for humans are zoonotic—originating especially from wildlife reservoirs. For Hantavirus, for example, the type of crop that surrounds forest fragments and the amount of remaining habitat in a landscape are determining factors predicting the chance of spillover to humans. For yellow fever, apparently, large amounts of edge forests combined with agricultural areas constitute a positive risk for disease emergence. Thus, identifying the key aspects of a landscape to manage in order to promote organismal movement and positive effects on ES might be a win-win strategy aiming both biodiversity conservation and ES provision and regulation.

Goals and objectives: In this symposium, we will bring together speakers using a range of methods, focusing on diverse set of taxa and ecosystem services from different parts of the tropics to increase the knowledge of: (a) how landscape structure affects organismal

spillover and ES provisioning and regulation; (b) how different ES are affected by organismal spillover; (c) how can we manage landscapes in order to obtain maximized spillover and ES provision and regulation?

How your symposia will improve landscape ecology science?

Most of the ecosystem functions and services performed by mobile organisms are throughout their interactions with other species and the capability of dispersal through anthropogenic landscapes. Understanding how landscape structure might facilitate species movement through agricultural landscapes and facilitate resource use is an important management tool for species conservation, ecosystem services provisioning and human health. We believe this workshop will be interesting to both theoretical and applied landscape ecology scientists since we will bring together speakers focusing on diverse set of taxa and ecosystem services from different parts of the world.

Broad thematic areas

Broad thematic areas 1st choice: Landscape ecosystem functions and services

Broad thematic areas 2st choice: From landscape pattern to functions (variables, metrics, indicators, monitoring)

Free Keywords

Cross-habitat spillover; landscape structure; mobile organisms; ecosystem services; agricultural landscapes