

A Study of the Relationship between Habitat Patch Metrics and Landscape Connectivity with Reference to Colombo Wetlands Sri Lanka

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Abstract : Natural Landscape fragmentation and habitat loss are emerging issues in Sri Lanka, which is due to rapid urban development and inadequate concern of managing Landscape connectivity. Urban Wetlands are the most vulnerable ecosystem effects from the fragmentation. Therefore, management of landscape connectivity with proper analysis and understanding has become a most important measure for urban wetland habitats. This study aimed to introduce spatial planning strategy to identify and locate landscape developments appropriately in order to restore landscape connectivity. Therefore, the study focuses on understanding the relationship between habitat patch metrics and landscape connectivity with reference to Colombo wetlands. Geographic Information Systems (GIS) was used to measure the wetland patch metrics; Patch area, Total edge, Perimeter-area ratio, Core area index and Inter-patch distances. Further, GIS-enabled least-cost path tool was used to measure the Landscape connectivity and calculate the number of species flow paths per wetland patch. According to the research findings; increasing the patch area, maintaining a mean perimeter-area ratio and core area index also reducing the inter-patch distances could enhance the landscape connectivity. Further, this study introduces three patch typologies; 'active patches,' 'open patches' and 'closed patches' that severs to landscape connectivity in different levels. In the end, the study proposes a strategy for Landscape Architects to select most suitable locations to implement ecological based landscape developments with adjacent to the existing urban habitat in order to enhance habitat patch metrics and to restore the landscape connectivity.

Keywords : landscape fragmentation, urban wetlands, landscape connectivity, patch metrics

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