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**An Assessment of the Visitor Traffic Dynamics at Minneriya National Park;
Implications for Visitor Management**

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Abstract

National Parks have become popular destinations for recreational activities in Nature-based tourism. The underlying purpose of establishing National parks is to provide maximum protection to wildlife and their habitats, while allowing public to have educational, recreational and spiritual experiences. Wildlife viewing is one such recreational activities that attracts thousands of nature lovers to National Parks (NP). Such high visitor concentration in National Parks can cause negative impacts on the natural ecosystems. This study was intended to assess the visitor traffic condition in highly visited Minneriya NP in the dry zone of Sri Lanka to support informed decision making in visitor management. Initially, the key habitats, its ecological and recreational attributes, and potential recreational impacts were identified by a resonance survey. Real-time visitor traffic data within the National Park as well as within the key habitats were collected utilising a mobile application developed for safari jeep drivers. To assess recreational and ecological importance of each habitat, an expert opinion survey was further conducted with a panel of experts who have sound knowledge on the study site. Real time traffic data analysis revealed that safari vehicles on average occupy the grassland habitat for 31 minutes and the average speed maintain is 15 km/h. Grassland had the highest recreational demand with highest number of vehicles typically occupying this habitat. The least recreational demand was for Bamboo forest habitat with vehicles on average spending 13 minutes and maintaining 26 km/h speed within this habitat. The expert opinion survey revealed that the most sensitive habitat in the park is the undisturbed dry-mixed forest and the grassland is the second one on the ranking. At the same time, the grassland has the highest potential for recreational activities over the other key habitats. Therefore, the visitor traffic in the grassland habitat needs to be managed or optimised subjected to ecological sensitivity in order for sustainable wildlife tourism. The optimum vehicle allocation and optimum time allocation for single trip and for key habitats were further determined based on expert opinion survey. Moreover, minimum safe distance that should be maintained between the wild animals and the safari vehicles are proposed based on expert opinions. The speed limit that can be permitted inside the park and the key habitats is also suggested. The inputs of this research will be used to develop a GPS based real-time visitor traffic management system which comprises with a mobile application and a web interface.

Keywords: National parks, Wildlife tourism, Motorised disturbances, Expert opinion survey, Real-time visitor traffic management