A decision support model for traffic congestion in protected areas

（自然保護区域における交通渋滞管理のためのシミュレーションモデルに関する研究）

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Increasingly there is a call for appropriate management policies to be implemented in national parks to minimize the impacts of tourism on both ecosystems and recreational settings. One facet of such problems is that of traffic congestion as car ownership grows.

This study applies a traffic Cellular Automaton Model (CAM) as a decision support tool to ease traffic congestion at Shiretoko National Park, a World Natural Heritage site in Japan. Despite serious traffic congestion having been reported in the park, the regulation of private car use was relaxed in 2011 to meet visitors' demands. Additionally, a new guiding system that requires tourists to hire a trained guide started in the same year.

This study shows that a probable increase in traffic congestion can be expected after the introduction of these new management systems, but congestion can be relieved by a slight modification of the temporal and spatial daily inflow of visitors. This is significantly the case following the suggested elimination of the afternoon peak visitation.

This study highlights the benefits of computational modeling to support decision-making regarding traffic management in protected areas.