

## Title

Modeling of recreation dynamics and capacity at multiple spatial scales

## Authors

Nathan Reigner, Jeremy Wimpey, Jillian Spies, Robert Manning

## Abstract

Recreational behaviors are complex and dynamic. This is particularly true when recreation areas are large, experiential opportunities are diverse, and demands for access are high. Freedom of movement and from the interference of others are key elements of high quality recreation. Influenced as much by site design and management as by the magnitude of use, these freedoms often underlie quality objectives for parks and protected areas. When seeking to manage large, complex and diverse areas in a holistic and systematic way, area-wide use patterns must be linked with site-specific crowding related impacts. This research presents an integrated approach to visitor use modeling at multiple spatial scales. Spatial models of recreation sites, including trails, roads, camps and attractions, provide a common basis for analysis and integration. GIS based network models identify locations within recreation areas where use concentrates, while micro-simulation models estimate individual and aggregated recreational freedom and crowding-related impacts.

## Keywords

Crowding, Spatial Networks, Simulation Modeling