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Monitoring and modelling walking track impacts in the Tasmanian Wilderness World Heritage Area, Australia

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Abstract

A program has been developed for monitoring the condition of unimproved walking tracks on a 1000-km track system in Western Tasmania, and it has been used as the basis of an eight-year study of track-impact development. The monitoring technique involves measuring track depth and two track-width indicators at permanently marked and widely dispersed sites, each site comprising ten transects located at 2-m intervals. Sites have been â€˜typedâ€™ on the basis of track slope, drainage and substrate characteristics, and the typing scheme has been tested and refined by assessing the relationship between type-usage groups and observed impacts. Analysis reveals that track depth and rates of erosion are strongly influenced by track type and to a lesser extent by usage, while track width is influenced mainly by usage and track bogginess.

The time-invariant variable â€˜usage gradientâ€™ was introduced to compensate for the fact that usage levels on most walking tracks in Western Tasmania have varied over time. Data derived from multiple inspections at 2â€“3 year intervals since 1994 from over 250 sites have been used to derive impact/time curves for different type-â€˜usage gradientâ€™ groups. Each of the impact variables can be approximated by the formula $m=\hat{I}\pm t^{B}$, where m is the expected value of the impact variable, t is chronological time, and $\hat{I}\pm$ and B are constants characteristic of the impact variable and type-â€˜usage gradientâ€™ group in question. The typing scheme and impact-development model have the potential to be used for systematically describing and predicting impacts over extensive systems of â€˜typedâ€™ tracks. The implications of these findings for the ongoing monitoring, siting and management of walking tracks are discussed.

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Keywords

Track monitoring; Recreational impact modelling; Management of walker impacts; Tasmania; Australia

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