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A Study on Procedures to Establish Standards Concerning Trail Management in Sub-Alpine Zones of Protected Areas

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Introduction

Trails are considered necessary in protected areas to help people get about, to increase enjoyment, and to protect the environment by concentrating traffic on trail tracks. However, lack of management results in erosion and muddiness of trail tracks, and destruction of vegetation along the trails. Degraded trail conditions detract from their functional and recreational value. The level or type of the design and maintenance of the trails is not always consistent with the preferences of the visitors, which reduces the quality of the visitor experience.

The environmental impact of the trails, including the ecological and visual impact, should be minimised by a systematic management decision process to set the standards for trails. The difficult issue of balancing the dual objectives of visitor use and resource protection can be hard to address without a framework to structure and guide decision-making (McCool 1994). The purpose of this paper is to propose a procedure of standard of trail management in a fragile sub-alpine zone in a protected area and to assess visitor impact problems on trail tracks

Methods

Most recreation management decisions have both a descriptive and an evaluative component (Cole 2004). These components are included in the process of identifying strategies for addressing visitor-caused impact on trails, and selecting appropriate management actions to minimise or prevent unacceptable impacts.

Trail impact assessment studies have been frequent over the last 30 years (Hammit & Cole 1998). However, the issue hasn't been adequately discussed in order to set a standard for techniques for maintenance and construction that is suitable for the conditions from ecological, visual, and technical perspectives and their mutual relationship. It is necessary to classify the problem into a material phenomenon and a psychological phenomenon. The material phenomenon is grasped from an ecological viewpoint. The causal relationship changes are usually caught in the 101 m to 102 m and monthly range. On the other hand, the psychological phenomenon is grasped from a scenic viewpoint. The causal relationship changes are usually caught in the 102 m to 104 m and seasonal range. The scale of range between material and psychological change is different in time and space. We introduce two procedures into the model of "the standard of trail maintenance" according to the difference in scale of space and a distinction between a descriptive and an evaluative component. One procedure is based on the geographic distribution pattern of natural resources and use pattern at the area scale. Another procedure is to focus a maintenance technique based on scientific data to deal with ecological impact at the scale of the site.

Daisetsuzan National Park was chosen for this case study. Hokkaido nature conservation office under the Ministry of the Environment established a panel to identify management tactics for visitor impact problems, and to include an analysis step employing experts. Experts can include agency representatives, scientists, non-government organization staff who were nominated by the office for Hokkaido conservation of nature. The panel works with protected area managers and staff to analyse impact problems, select management actions.

Results

Step 1 of 1st procedure: "Ranking for protection of visitor experience" was closely connected with the goal of Daisetsuzan National Park. This ranking was based on the scientific knowledge of the panel and the existing administrative plan and a desirable use condition referring to the concept VERP to identify protected area values, purposes, and management objectives. Step 2 of 1st procedure: "Ranking for conserving the trail condition" was settled in parallel based on the degree of necessity and urgency of countermeasures referring to ecological fragility through field investigations and previous research. Step 3 of 1st procedure: "Maintenance level of trail" was set up in nine categories that made the matrix of "Ranking for dealing with conserving a trail condition" and "Ranking for protection of visitor experience".

2nd procedure: At site scale, "Guidance of techniques for trail maintenance" was formed separately from the procedure of "Standard of trail maintenance". Step of "Guidance of techniques for trail maintenance" was composed of "Effectiveness of countermeasures", "Sampling damaged site", and "Understanding of impact causes". The contents of "Effectiveness of countermeasures" was to be adjusted to "Direction of countermeasures" of each trail sec-tion. "Direction of countermeasures" was set based on the comparison between "Current condition" and "Ideal condition". The matrix of factors of encouraging low visitor use and increasing the resistance of tracks showed a mutual balance sheet to examine the "Direction of counter measures".

But this has not yet been tested in the field. It would be useful to apply it in a variety of protected areas and to improve the framework.

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