Assessing technical trail features for mountain biking: examples from four countries

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Introduction

Mountain biking is an outdoor activity with growing popularity internationally. Prior to mid-1980s it was largely a North American phenomenon, but since then mountain biking activities have emerged in most continents, mostly notable in Australia and Europe (Webber, 2007; Pickering, et al., 2010b). The continued increase in mountain biking participation is accompanied by diversifying riding styles, including trail riding, cross-country and freeriding. Each mountain biking style is associated with different set of management issues. This presentation focuses on the management concerns about one particular style of mountain biking – freeriding.

The key element of a freeriding experience is technical challenges (Webber, 2007). Mountain biking trails that traverse rough terrains offer such opportunities naturally, but when challenging terrains are limited or non-existent human-made trail technical features (TTFs) are often created to provide such experience. IMBA (2004) defined TTFs as obstacles on the trail requiring negotiation and natural obstacles that add challenge by impeding travel or features introduced to the trail to add technical challenge. While some TTFs are formally provided by public land agencies, many are built unofficially by mountain bikers using local or foreign materials. The existence and use of unofficial TTFs raise management concerns about potential ecological impacts and visitor safety, though such concerns can also be applied to their official counterparts (Newsome and Davie, 2009; Pickering et al., 2010).

The purpose of this presentation is to provide the first international overview of TTFs as an emerging visitor impact management issue. Specifically, we highlight and discuss results from initial assessments of TTFs from Australia, the United States, Germany and Portugal.

Methods

Pickering et al. (2010a) published the first detailed assessment protocol specifically for TTFs. This protocol (TTF-v1) consisted of 24 attributes in four broad categories, including TTF characteristics, site details, environmental impacts, and safety/management issues. They applied the protocol to the

Blackbutt Forest in southeastern Queensland, Australia. Kollar and Leung (2010) adapted TTF-v1 with a different sampling design, three additional assessment items (TTF generic type, TTF naturalness and ground cover) and two modified items (TTF safety and canopy cover). This modified TTF assessment protocol (TTF-v2) was applied to two urban-proximate mountain biking sites located in central North Carolina (Legend Park) and Montana (Spencer Mountain) in the United States (Kollar, 2011). Subsequently, TTF-v2 was applied to the Deister mountains near Hannover, Germany, a popular mountain biking destination and ecologically valuable NATURA 2000 protected area (Lehrke et al., 2010). A rapid assessment of TTFs was also conducted in Sintra-Cascais National Park near Lisbon, Portugal. Due to logistical constraints only locations and TTF types were recorded on the Portuguese site.

Results

Direct quantitative comparisons of TTF assessment data across four countries are not feasible due to the preliminary nature of this project, but some initial comparisons are possible as the assessment protocols (TTF-v1 and TTF-v2) had many common assessment items. Below is a brief country summary.

Australia: A total of 116 TTFs of eight TTF types were identified. Jumps were found to be the most common TTF type. Almost all features received good or moderate condition scores. There was a direct association of TTFs with removal of vegetation, soil, and rocks to construct TTFs. Other impacts include bare ground exposure and the introduction of littering and foreign materials. There were significant differences among the TTF types on size and dimensions of TTFs as well as the extent of bare ground (Pickering et al, 2010a).

USA: A total of 287 natural and built TTFs were assessed in the two U.S. study sites, representing 14 different types of TTFs. The most common TTF types in Legend Park (coastal plain site in North Carolina) site were bridges and drop-off features, while jump features were most common in Spencer Mountain (montane site in Montana). Wood was the most dominant material used for constructing TTFs on both sites. Two thirds of the TTFs were in good condition while a higher proportion of TTFs in Legend Park received lower safety ratings (Kollar, 2011). More TTFs were clustered to provide continuous challenges on the montane site.

Europe (Germany and Portugal): TTF assessment data of the German and Portuguese sites are being compiled and only limited information is available at the time of this writing. At the Deister site near Hannover, 103 natural and built TTFs were identified. The most common TTF types included single or multiple ramps (59), berms (17) and hill-natural terrain (13). Some TTFs are combinations of multiple types, such as ramp + berm. Soil and wood was the most common construction material for TTFs. The Portuguese site (Sintra-Cascais National Park) was recently assessed. Four-nine TTFs were identified on two popular mountain biking trails. The most common TTF types included bridges (19) and ramps/jumps (15).

Discussion

This presentation provides the first international look at trail technical features (TTFs) and hopefully stimulates research attention and collaboration in this topic. The assessment results suggest that some TTF types are common across different countries, such as jumps and bridges, and they are mostly built using natural materials collected from adjacent areas. While some management concerns about TTFs such as safety are comparable, environmental and social impacts may vary across countries due to differences in terrains, ecosystems and user profiles. Despite the contextual complexity, by applying standardized assessment protocols researchers and managers can share and compare TTF data more directly and begin to explore common issues and solutions. Such efforts will benefit future planning and management of mountain bike trails and sites.

References

IMBA (International Mountain Biking Association) (2004). Trail Solutions: IMBA's Guide to Building Sweet Singletrack. Boulder, CO: IMBA.

Kollar, C. (2011). Characterizing Mountain Biking Use and Biophysical Impacts through Technical Trail Features: A Case Study of a Montane and a Coastal Plain Site in the USA. M.S. Thesis. Raleigh, NC: North Carolina State University.

Kollar, C., & Leung, Y.-F. (2010). Assessing and Understanding Environmental Impacts of Mountain Biking's Technical Trail Features. Paper presented at the Emerging Issues 3: Urban-Rural Interfaces, 11-13 April 2010. Atlanta, GA.

Lehrke, F., von Ruschkowski, E., & Ruter, S. (2010). Mountain Bikers, recreationists, land owners and conservationists: Multiple conflicts in Hannover's Deister region. In: Goossen, M., Elands, B., & van Marwijk, R. (2010). (eds.), Proceedings of the 5th International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas (MMV5) (pp. 56-57). Wageningen, the Netherlands: Wageningen UR.

Newsome, D., & Davis, C. (2009). A case study in estimating the area of informal trail development and associated impacts caused by mountain biking activity in John Forrest National Park, Western Australia. Journal of Ecotourism, 8, 237-253.

Pickering, C., Castley, J. G., Hill, W., & Newsome, D. (2010a). Environmental, safety and management issues of unauthorised trail technical features for mountain bicycling. Landscape and Urban Planning, 97, 58-67.

Pickering, C. M., Hill, W., Newsome, D., & Leung, Y.-F. (2010b). Comparing hiking, mountain biking and horse riding impacts on vegetation and soils in Australia and the United States of America. Journal of Environmental Management, 91, 551-562.

Webber, P. (ed.) (2007). Managing Mountain Biking: IMBA's Guide to Providing Great Riding. Boulder, CO: IMBA.