

Sustainable Trail Management, Definitions and a Management Model

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Introduction

Apart from Hugo (1999), existing literature on “sustainable trail” development frequently emphasizes the importance of biodiversity conservation or physical trail surface management (Marion & Leung 2004). The extent to which the sustainability principles (Social, economic and environmental) have been developed, accepted and applied by trail management bodies and relevant stakeholders as the basis for ‘sustainable trail management’ is a paradigm that is explored in this research. The research sets out to establish a definition and model for sustainable management of trails.

Methods

To do this three studies were carried out, and the first addressed the question “what is a sustainable trail?” This work was done through online debate discussion generated among a community of trail managers, users and researchers. The second part of the work examined current practices by trail managers in protected areas. The objective was to establish issues and practice related to trail management where conservation of the resource was also a priority. A questionnaire was distributed to managers in a network of designated areas identified through the International Union for the Conservation of Nature. In the third strand of the work the National Waymarked Ways Advisory Committee (NWWAC), a body charged with the management of long distance walking routes in Ireland, and the researchers examined how the current model of management of these routes could be

made sustainable through a process of consultation and discussion with local trail management committees. The key elements of each methodology are outlined in table 1.

Results

Study one: The sustainable trail defined

Sustainability indicators for trail settings were diverse and ranged from broad to specific levels of description of environmental, social and economic criteria (figure 1). Political indicators of sustainable trail development were less discernable within the debate contributions.

There was an overall consensus by the participants that the “sustainable trail” was a realistic concept. The basic premise for making the “sustainable trail” a reality included governmental support, ongoing stakeholder participation and commitment and multi-dimensional and long-term frameworks. Furthermore, emphasis was placed on the need for trail development activities to receive adequate and continuous funding, resource and personnel support and inputs from relevant sources.

Study two: Trail management practice

The application and practice of environmental trail condition assessment and monitoring was limited. For managers that did attempt to assess environmental conditions, subjective assessments were employed and data was based mainly upon ad hoc personal observations or alerts from recreation users of signs of damage. Key indicators of trail damage were coarse and included general observations

Table 1: Overview of methodologies applied to address the three research themes defining sustainable trail management, management practice and development of a sustainable management model.

Overall Study Objective/Task	Core Objective	Define and examine the need for a sustainable trail management framework.		
	Core Tasks	Collaborative investigation and international review of ideal and current trail management frameworks. Changes needed to meet sustainability requirements at a national/regional level		
Characteristics	Method 1 International Debate	Method 2 International Management Questionnaire	Method 3 Management Workshop	
Target Population	Diverse/Multiple Targets Participants drawn from a variety of organizations internationally, directly or indirectly related to trail management	Specific Target Group IUCN- Members Participants are drawn from one organization that shares a specific management mandate globally	Specific Target Group NWWAC- Local committee members, Ireland Participants are drawn from one organization that shares a specific management mandate relating to trail development nationally	
Scale of study	International- Macro	International- Meso	National	
Research Strategy	Conceptual Design/ Visionary/ Scenario building using Grounded Theory Approach	Evaluative study and mapping of current management position	Case Study approach Consensus based study: Integrative study of current management practices, visionary goals and action plans	
Research Tool	Email/ Internet Survey	Postal Survey	Workshop series	
Sampling method (Non-probabilistic)	Snowball sampling Key informants from a range of organizations were identified as having suitable knowledge on the study themes or access to a database of suitable participants Key informants identify and recruit potential collaborators in target organizations	Purposive sampling Individual managers identified through an established database	Purposive sampling A specific number of known members of one organization selected to participate. In-depth exploration of one trail setting	
Key features	Open-ended narrative questions Unstructured format Exploratory approach that allows flexibility for respondents to explore in depth and qualify their answers on key concepts in unlimited ways.	Closed questions Structured format Consider predetermined specific issues relating to trail management Evidence of existing and future management actions relating to specific themes Answers are specific to selected management themes	Facilitated workshop series including presentations, surveys, group work and open feedback sessions Direct communications with key actors	
Outcome of Approach	Visionary/ New Concept development New Management Scenarios Ideal features of a sustainable trail management framework World position and identification of key issues, actors, indicators related to sustainable trail management	Current Position Management Trends Lay out the major positions taken, and not taken in relation to specific trail management activities Identify areas of concern around trail management issues	Applied Vision/Theory Application and evaluation of the sustainability theory in a specific management context	

of broad changes in bare ground relative to vegetative cover and large-scale erosion features rather than detailed analysis of specific vegetative species and soil properties. A limited number of managers used standard criteria or guidelines to assess the overall quality of trails and a minority of managers checked the accuracy and precision of the methods applied. Environmental trail condition data was considered most useful in aiding trail maintenance decisions and activities.

For managers who did not conduct environmental trail condition assessments reasons included lack of information, staff and resources to conduct such activities. Managers were not specifically qualified for undertaking issues directly related to trail management with a cross-section of managers indicating qualifications in administration, business, social sciences, arts as well as environmental sciences. Managers remit in conservation areas was generally not directly focused on trail

Level I Long term development and wellbeing of the trail ecosystem

Level II

Environmental

- Soil erosion
- Bare and trampled width
- Overall % cover
- Soil type, condition
- Landscapes the trail crosses
- Disruption to adjacent land
- Litter
- Solar aspect
- Scenic views
- Exposure
- Noise levels
- Effectiveness of maintenance

Political

- Legislation
- Government support

Economic

- Budgeting
- Financial backing
- Maintenance costs/year
- Revenues generated

Social

- Access
- Accommodation
- Services
- Interest and variety levels
- User information
- Levels of use
- Conflict levels between user/owner groups
- Employment
- Level of volunteering
- Level of maintenance
- Safety
- Level of community involvement
- Level of monitoring

Figure 1: Key indicators for a sustainable trail.

related issues. There was an absence of skilled and trained staff whose remit could address aspects of trail management. Most of the employees involved in trail management activities were permanent staff responsible for the management of the conservation areas as well as attending to a range of issues relating to trail planning, maintenance, assessment, information provision and administration. Additional support for trail maintenance was achieved through part-time, seasonal and casual volunteers. External contractors were used mainly for trail construction. There was limited training and assessment of work performance of staff in relation to trail-related responsibilities.

Despite the diversity of challenges in relation to recreation and other land use activities that can occur in conservation areas, very few managers had adopted integrative planning procedures such as the C-CAP, LAC and VIM frameworks, although there was a request for more information on the LAC model. Further information was also requested by managers on how to develop trail management plans.

Study three: The NWWAC Visionary and Action Planning Exercise

The visioning and action planning process highlighted first the key management strengths, problems and challenges that existed in the national trail network. Key issues that required attention were the unsuitability of the long-distance concept as a basis for Waymarked Way design, poor trail planning, routing and maintenance, lack of linkage to surrounding facilities and accommodation, and lack of local awareness. The local committee members identified limitations such as fragmented and erratic funding, lack of local community involvement and long-term commitment, lack of young people represented in management activities and lack of group support and co-ordination.

On a consensus basis, the local committee members worked with the agreed set of issues and created a set of priority action goals for tackling the sustainable development of the network. In total, four key Waymarked Way vision areas for sustainable development were agreed upon by the executive and local management committee

members relating to the local community, land management, research and trail management. A total of twenty more specific actions or indicators for change were identified in order to achieve the four key visionary Waymarked Way goals.

Of priority, the local management committees throughout the national network agreed that the local community were the core focus of a sustainable vision. The sustainable development of the Waymarked Way network would require management activities that enhance local community involvement, use of trails and benefits from related trail developments, including enhanced accessibility and increased use of trails, employment opportunities, and education and health benefits.

The vision and action plan marked a sharp shift in values from the previously adopted long distance management model where tourists were the sole beneficiaries of trail developments to a sustainable management model that was based on local community input, commitment and benefits.

To support and help achieve the action plan, the local committee members identified an expansive and diverse set of potential national, regional and local stakeholders and governmental departments in the areas of agriculture, conservation, forestry, education, heritage and recreation.

Conclusion

The key components for a sustainable trail were defined both at a theoretical level through the sustainable trail debate and in an applied context through the NWWAC visionary process. In both studies there was a shift from considering one aspect of sustainability to considering economic, social and environmental dimensions together. The sustainable trail debate depicted the “sustainable trail” as fundamentally a multi-dimensional construct that reflects broadly an overarching long-term and integrated consideration of social, environmental and economic trail issues.

The findings highlighted that maintenance of certain necessary or desired characteristics of trail management settings is central to a “sustainable trail”. However, the characteristics of a sustainable trail management setting are value-based and

scale-based and as a result there is no ideal set of trail features that depict a well-maintained “sustainable trail”. The submissions revealed that there are multiple definitions, scales, trail features, management settings, landscapes, social, environmental and economic issues that can contribute to the concept.

In practical application, the sustainable principles are more clearly understood at a national scale, as when applied to the National Waymarked Ways network. At this scale, the definition for a “sustainable trail” outlined issues that were at the heart of Waymarked Way management challenges and aspirations.

The vision that emerged from the NWWAC consultative process is:

“For local communities throughout Ireland to create, manage and use a network of scenic and diverse walking routes that are of a quality that:

- Makes the best use of local knowledge and awareness, facilities and available resources,
- Brings economic and social opportunities into the locality, and
- Protects our natural heritage and environment for future generations.”

The study also demonstrates that in a specific setting, the application of sustainable principles may result in tradeoffs between social, environmental and economic goals. Although all three sustainable goals were incorporated into the final shared NWWAC vision, not all three cornerstones were equally addressed in the action plan. Since the local community was identified as the key means for the NWWAC to achieve sustainability, most of the vision and action goals were related to ways of achieving local community involvement in trail management activities and increased participation and benefits in trail related activities. The local committee members anticipated that economic and environmental benefits would be achieved as a consequence of this social focus.

The sustainable trail concept developed sharply contrasts with the trends that emerged in the review of international trail management practices and challenges. In practice, there was no clear sense of trail development or management reflecting

an integrative approach towards environmental, social and economic issues. In particular, very few managers adopted recreation planning frameworks such as LAC which are considered as useful decision-making models for integrating multiple issues, activities and perspectives. Planning was solely addressed through physical trail design, construction and maintenance activities.

Achieving a sustainable trail is difficult where staffing and land use issues take priority over trail management. The manager survey results suggest that trail maintenance is more “wait and see” with focus on repair and recovery activities, rather than maintenance and improvement of the original conditions or setting. This contrasts with findings in the sustainable debate study and the planning approach taken by the NWWAC, which create a sense of overall concern about the future from the perspective of a trail organisation, a community or the environment. The studies emphasise that the time horizon of planning for sustainable trail development is long-term, and incorporates more than one phase of a trail life cycle such as trail construction or trail maintenance. It spans trail design and exploration through to closure or renewal of a site. Thus, short- and long-term concerns come into play.

What are the indicators for a sustainable trail?

A suite of indicator levels and categories emerged as a result of the theoretical and applied studies, as follows:

a. Core values

There proved to be unshakable and absolute core of sustainability values common to both the debate study and the visionary exercise that were precursory to the process of identifying suitable and specific sustainable trail indicators. There was a mutual and accepted understanding that a sustainable trail process must reflect the three cornerstones of sustainable development that maintain and develop in parallel and together the environment and respects the livelihoods and needs of people in the setting. It follows that the “result” against which the success

of a trail development or trail management activity should be judged is the achievement of, or the contribution to, human and ecosystem well-being together.

Expanding from these findings there are two different ways of organizing possible sustainable indicators.

b. Theoretical approach: Generic indicator groups

In the debate, the participants were asked to theoretically recommend key indicators for a sustainable trail in general terms. The indicators were classified into four broad and generic environmental, social, economic and political sectors. The environmental cornerstone received the most diverse range of indicators and levels of detail. In particular, the participants elaborated upon specific features such as trail path width, amount and type of vegetation and soil condition. The remaining three areas of social, economic and political aspects yielded more general indicators.

c. Applied approach: Visionary action plan

The Waymarked Way study highlighted indicator requirements at a national scale and the findings suggest that a more comprehensive basis for indicator development could be achieved at this level. In total, four key Waymarked Way vision areas for sustainable development were agreed by the executive and local management committee members relating to the local community, land management, research and trail management. A total of twenty more specific actions or indicators for change were identified in order to achieve the four key visionary Waymarked Way goals. Although the action goals were qualitatively devised, there are signs in this first-step study of attempts to set measurable goals within a broad integrative planning framework. Management priorities and timescales were devised and understood by the group as a whole that were organised into short, medium and long term objectives. It also became clear, that for each of the actions under the four key management themes a range of partnerships and management bodies were responsible for supporting and achieving the action goals. The three different levels of indicator feedback that emerged in these studies suggest that indicator representation in the trail setting must be

wider than a consideration of ecological factors alone. Just as the NWWAC study emphasised the importance of the social dimension of trail development, this is further supported by the international survey of trail management trends in conservation areas where the ecological aspects of trail use were placed in context of the multiple land, recreation uses, diverse impacts and management issues to be addressed. With many issues to address it appeared that management had little time or resources to develop detailed trail deterioration assessment and monitoring protocols. Instead, managers adopted simple assessment procedures that used coarse environmental trail damage indicators that were measured subjectively and qualitatively. Very few managers assessed detailed aspects of environmental trail damage such as changes in vegetative structure but used other indicators mainly associated with user impacts such as litter, visual intrusion, overcrowding, noise and wildlife impacts to determine quality of the route.

With multiple physical, environmental and social indicators to consider on the immediate trail surface, it is clear that in a management setting where many responsibilities and issues are at play, that a broad set of indicators are more appropriate and can be assessed simply and efficiently.

How do you achieve a sustainable trail?

There are no universally accepted indicators or examples of how to measure and achieve a sustainable trail.

In the sustainable debate study, a set of broad criteria were highlighted as significant in supporting the evolution of such a process including the long-term commitment and participation of the local community, support at a governmental level, integration of trail issues with wider policies such as the environment, health and the economy. In essence, trail settings require a broad and wider recognition and integration by multiple land use and development sectors so that they can be developed in a sustainable manner.

The three broad cornerstones of sustainable development that are recognised globally, together with Hugo's comprehensive trail management model (1999) are useful as a benchmark for managers to evaluate existing approaches towards trail management and development in diverse settings. The ho-

listic nature of the sustainable trail concept enables standards to be set that managers can measure with their own experiences and practices. In the management of trails in protected areas existing management practices contrasted sharply with the ideal of sustainable trail management. It was clear that managers were involved in a matrix of land use issues and associated management problems with little room for a detailed trail planning framework that could integrate specifically all aspects of social, environmental and economic trail development. Feedback from the international survey suggested that trail management was not a key area of concern and as a result there were limited resources, funding and personnel available to support trail development and management activities. Furthermore, there was limited awareness and knowledge of aspects of trail management such as trail degradation assessment, monitoring and maintenance.

With the experience gained from the sustainability debate study and the NWWAC case study, there is much scope for trail management settings to adopt planning frameworks that are rooted in the principles of sustainable development.

The NWWAC study demonstrated the need to plan sustainable trails at a national level so that the sustainability principles could be transferred to regional and local scales of application. The NWWAC study concluded with one mutually shared set of objectives within a network that reflected many different types of trails and issues as well as changes in user demands. This led to a transformation in the identity of the network from being solely a long distance route provider to a more expansive and diverse set of multiple short community-based recreation routes that reflected contemporary societal demands.

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