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Research paper

Revisiting the River Skerne: The long-term social benefits of river rehabilitation

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HIGHLIGHTS

- This pre-, post- and long-term perception survey of river rehabilitation demonstrates enhanced social values and benefits over time.
- Better science/social science collaboration will improve rehabilitation outcomes.
- Common vision building is vital for sustainable environmental management.
- People's aesthetic preferences are strongly related to ecological quality and access.
- A good balance between high and low-use river areas increases both social and ecosystem values.

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ABSTRACT

This article compares the results from three public perception surveys concerning the rehabilitation of the River Skerne in Darlington, NE England. It discusses people's perception over time, from pre-rehabilitation expectations to initial impression of the rehabilitation to their opinions of the matured project in a longer term perspective. It is one of the few studies in the UK to include pre-, post- and long-term assessments for the same area. The green environments riverscapes provide, especially in urban spaces, have positive effects on people's well-being and are appreciated as areas for relaxation and recreation. However, the over exploitation of riverscapes has dramatically decreased their function, the ecosystem services they provide and the connection between people and nature. Results from our surveys indicate that with careful design considering both social and ecosystem values, and wider collaboration between science and social science, river rehabilitation works can re-establish riverscapes that provide attractive recreational spaces without losing their possibilities to sustain healthy ecosystems. Ecosystem recovery is a long and time consuming process, but this research shows that it also takes time for people to build up a caring and emotional connection to their local riverscapes. This process can be aided by common vision building and attending to features providing possibilities for recreation and access, and attractive greenery. We conclude that by applying a transparent process for rehabilitation schemes, with a clear social and environmental focus, we increase our chances of providing long-term benefits and receiving public support for enhancing the state of our rivers.

1. Introduction

Water is one of the most vital substances for life on earth, and utilisation of its resources has been an essential ingredient for the growth of human civilisation and economic development. The modern management of water and waterways has been dominated by a scientific and engineering viewpoint and exploited for water abstraction, waste disposal, to obtain energy and as transport systems. This dominating viewpoint has caused a fundamental separation between the natural realm of waterways and the social contexts within which they have been used, and has severed people's cultural and physical connections with riverscapes. River networks have been impeded, constrained, re-routed and culverted to such an extent that natural river systems today are a rarity. All these stress elements have had a major degrading effect on rivers and the ecosystem services they provide, particularly in urban environments. The 1970s and 1980s saw a wave of environmental awareness and concern, forming a new way of thinking about sustainable resource usage and the value of preserving natural environments (Evans, 1997). This attentiveness triggered the first major attempts to recreate the ecological and recreational values of rivers in the UK.

This paper reports the results from public perception research of a rehabilitation scheme on the urban River Skerne in Darlington, UK. Three consecutive perception surveys provided a unique

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opportunity to carry out a long-term assessment of the social benefits of river rehabilitation, and the paper aims to demonstrate the change in people's perception and attitudes of rehabilitation over time. We focus specifically on three key types of social benefits: aesthetics, wildlife and recreation and conclude with some issues to be considered to improve the public success of future urban rehabilitation schemes.

1.1. Policy background

The historical development of water policy differs between cultures, and underlies the way people and authorities in different countries view and relate to river rehabilitation. The first measure for addressing degraded river systems was to turn to the issue of chemical water quality, which gradually improved in the 1970s and 1980s (Brewin & Martin, 1988). However, an increasing concern and knowledge of species extinction due to human induced habitat destruction drove many influential environmental Non Governmental Organisations (NGOs) to also fight for improved physical conditions. Due to their increasing power and large landownership, these organisations have been effective actors in the formulation and implementation of environmental legislation in the UK (Bell & Mcgillivray, 2008; Evans, 1997).

Enhancement works on degraded river channels were initiated partly through campaigns and international agreements on biodiversity conservation (Nienhuis, Leuven, & Ragas, 1998), and a globally increasing pressure to acknowledge environmental issues forced governments to take further action. The National Rivers Authority (NRA – the forerunner to the Environment Agency) was formed in 1989, and given an increased responsibility for environmental administration (Evans, 1997; Newson, 2009). At this time, thinking began to move towards more holistic catchment management, which integrated rehabilitation concepts (Brookes & Shields, 1996; Calow & Petts, 1992) and guided the NRA in its approaches to river management.

Building on the increasing understanding of fluvial ecosystem function and ecosystem theories, such as the river continuum (Vannote, Minshall, Cummins, Sedell, & Cushing, 1980) and flood pulses concepts (Junk, Bayley, & Sparks, 1989; Tockner, Malard, & Ward, 2000), it is now largely agreed that freshwater ecosystems can be improved by the restoration of fluvial processes (Lake, Bond, & Reich, 2007), as well as physical habitat heterogeneity (Maddock, 1999). Although river rehabilitation projects continue to be predominantly small scale, it has been argued that they will have a cumulative effect on the total ecology of the catchment (Kondolf et al., 2008).

In much of Europe, river rehabilitation has been carried out foremost within the domain of engineering and natural science, focussing on target species but taking little notice of social appeal. However, the benefits of integrating social values and engagement are increasingly seen as the way forward for river rehabilitation (Eden & Tunstall, 2006; Pahl-Wostl, 2006). The EU Water Framework Directive recognises that successful enhancement of rivers partly relies on public involvement, information and consultation (European Commission, 2000), and the Rural Economy and Land Use Programme emphasises how environmental management projects benefit from collaborations between natural and social science (RELU, undated). Public participation is therefore becoming an integral part of almost every environmental design project in the UK.

A major step forward for river rehabilitation in the UK came with the establishment of the River Restoration Project (RRP) in the 1990s (today the River Restoration Centre). The first river rehabilitation schemes carried out by the RRP aimed to test state of the art techniques at three demonstration sites: the River Skerne (Yorkshire), the River Cole (Wiltshire) and the Brede River (South Jutland, Denmark). In 1995 the River Skerne rehabilitation centred on enhancing the biophysical and aesthetic state of a suburban river. The Skerne site was the focus of 'before' and 'after' public perception surveys in connection with the river rehabilitation scheme (RRP, 1995; Tapsell, Tunstall, & Eden, 1997), and a long-term follow-up survey 13 years later (Åberg, 2010).

1.2. Rehabilitation and social benefits

Large sums are now being spent on river rehabilitation, but funding is rarely available for post assessments (Bernhardt et al., 2005). Little is therefore known about either long-term ecosystem or social benefits. Assessing social outcomes of river rehabilitation projects is acknowledged by several authors (Palmer et al., 2005; Wohl et al., 2005), but is often seen as secondary to biophysical monitoring (Eden & Tunstall, 2006). However, as the perception of and demand for river rehabilitation schemes as socio-environmental projects increases (Nassauer, Kosek, & Corry, 2001; Pahl-Wostl, 2006; Wohl et al., 2005) so does the need for social monitoring and evaluation.

Urban regeneration and greening is often focused around riverscapes as the last space available to bring nature back into the cities (Yokohari & Amati, 2005). However, an urban river also needs to be designed to fit into the many restrictions existing in a built up environment. For a river rehabilitation project to be supported it also needs to provide value to the community such as recreational space and accessible nature experiences (Asakawa, Yoshida, & Yabe, 2004; Nassauer et al., 2001; Petts, 2007; Steinwender, Gundacker, & Wittmann, 2008). That is not to say that urban river rehabilitation is purely aesthetic and cannot have ecological relevance. Fulfilling both social and environmental criteria is increasingly acknowledged as the key to effective and successful river rehabilitation (Palmer et al., 2005; Petts & Gray, 2006; Reichert et al., 2007), and essential for projects to not only be socially accepted, but also desired and cared for (Gobster, Nassauer, Daniel, & Fry, 2007; McDonald, Lane, Haycock, & Chalk, 2004).

Local people's attitudes (and attitude changes) are a powerful instrument in urban river rehabilitation. Drastic changes to familiar surroundings, especially in combination with public exclusion, can generate long lasting public discontent (Åberg & Tapsell, 2012). When social values are acknowledged and benefits provided such as enhanced aesthetics, access, recreational space and attractive greenery and wildlife, an emotional, caring feeling is often created which helps to reconnect people with nature (Asakawa et al., 2004; Eden & Tunstall, 2006; Nassauer, 1995; Newson & Chalk, 2004). The Sustainable Development of Urban Rivers and Floodplains (SMURF) project was one of the first examples in the UK of successful public engagement in the design and implementation of an urban river restoration project (Petts & Gray, 2006). Other projects, such as the Wise Use of Floodplains (Cuff, 2001) and Upper Wharfedale Best Practice Project (Newson & Chalk, 2004), have also shown how an early, continuing, and effective public engagement process further enhances social benefits and increases the meaning of the local environment.

1.3. Sensory, social values and river rehabilitation

The visual impression that river rehabilitation schemes give is an important factor to assess as most people make decisions based upon what they see and perceive in the landscape (Nassauer, 1995). A positive visual impression can increase the cultural value of the riverscape, which might result in changed attitudes and actions in favour of the natural environment. Here we discuss findings from the surveys which focus on the perception of the key issues of: attractiveness/aesthetics, wildlife, visits and recreation.