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THE FUTURE OF BURNS BOG, CANADA: STAKEHOLDER PARTICIPATION OR HABITAT DECLINE?

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Summary

Complex stakeholder pressure on peatlands is nothing new. Throughout history, peatlands have been looked upon as providers of socio-economic opportunities. Burns Bog in Vancouver, Canada is a good example of this. This Bog was utilised first by indigenous peoples and later it was partially used for sod peat production. These have been influential impacts ecologically, but Burns Bog has largely retained its hydrological integrity. Though now a cutover peatland, spontaneous regeneration has been rapid and has resulted in high species diversity. Today it has been identified as a unique peatland system in that it is located in both a Mediterranean climate zone and high population, urban setting. This urban growth has engulfed the regenerating peatland contributing to a plethora of new pressures and leading some to believe that the future is bleak. This paper will review the many socio-economic impacts on Burns Bog, as well as strategies for its conservation, stakeholder perceptions and policy implications.

Keywords: Burns Bog; Stakeholder; Urban peatland.

Introduction

For many centuries there has been an active interface between people and nature on Burns Bog. Located in the Fraser River delta in British Columbia, Canada, this raised peatland had long been utilised by indigenous peoples for its numerous natural resources – particularly for gathering food (hunting and foraging) and medicinal biota (Burns, 1997; Washbrook, 1996), and though land claims still exist today, specific details of traditional activities are not fully described. However, there is some evidence that first nations peoples may have actively managed some of this peatland through the use of fire, in order to increase berry yields (North, 2003; Turner, 1975) on a similar timescale to the management of heather in some blanket peatlands today. This indicates that Burns Bog has undergone anthropogenic impacts for many centuries. More significant impacts occurred with the arrival of European and other settlers and in recent decades the continual expansion of the Greater Vancouver conurbation has caused the peatland system to become surrounded and, thus, altered. Hand harvested for fuel peat as early as the 1930's, peak peat production was reached during, and just after, World War 2. Thereafter it was industrially harvested for horticultural peat until the late 1980's. It is now encroached upon by the City of Vancouver landfill facility (15% of its area), numerous urban infrastructural developments (including transport, residential and industrial) and intensive agricultural activities. The net result is that the Bog has been reduced in size from an estimated ca. 4,800 to 2,821ha (ecologically viable) within the last 100 years (Hebda *et al.*, 2000). Drainage and other activities have, as with most impacted peatland systems, altered the hydrology and morphology of the Bog (Burns Bog Conservation Society, 2004)

and today principal impacts include peat shrinkage, loss of hydrological integrity, fire damage, invasive species and species decline or loss. Crucially, Burns Bog is not designated a statutory nature reserve nor is it secured under international agreements, national or provincial policies or suitable protective legislation. This paper argues that the Bog is both ecologically and socially valuable and that its future wise afteruse may be dependant on its being regarded as a viable social-ecological system (Berkes and Folke, 1998).

Conservation strategies

Many of the species recorded on Burns Bog are at the limits of their geographical distribution including twelve species of Sphagnum (86% of the regional Sphagnum species). Vitt *et al.* (1999) recorded that it contains 181 vascular plants, 76 moss species, 25 hepatic species and 67 lichen species and thus they argue that it has a “unique combination of climatic, physiographic, and historical factors have made Burns Bog floristically distinct at regional, national, and international levels”. It is also referred to as a “wetland of major significance” (Higgs, 2003 p. 6). As a modified peatland landscape this is perhaps not too unusual since disturbed peatlands can have a high species diversity, in some cases higher than undamaged peatlands in the same region (Warner and Asada, 2006) though Hebda and Biggs (1981) show that the pre-disturbance biota of the Bog may have been significantly higher. The Burns Bog Ecosystem Review (2000) contains a detailed analysis of geological, ecological and hydrological functions, including proposals for restoration, mitigation of damage and conservation of specific rare or threatened species (see Hebda *et al.*, this volume). In its damaged state the Bog is considered to have a high biodiversity value. Chapman *et al.* (2003) discuss how modest harvesting of peatlands can result in increasing biodiversity and spontaneous regeneration of abandoned peatlands elsewhere in Canada show high species diversity (Poulin *et al.*, 2005). Mechanisms for restoring peatlands that have been block cut and vacuum harvested (as is the case with Burns Bog) under Canadian climates are now well established (Robert *et al.*, 1999). After extensive review it has been suggested that at least 2,450ha of the remaining peat system needs to be conserved and / or restored in order to maintain or augment the ecological and hydrological integrity of the Bog and the resulting ecosystem services (e.g. C sequestration) that it may provide (Whitfield *et al.*, 2006).

Socio-economics

In 2004 a consortium of four national, provincial and local governmental agencies acquired in the region of 2,000ha of Burns Bog for ~CAN\$73 million. This large sum is an indicator of the value that peatland natural capital may have, especially in an urban landscape. However, soon after the purchase plans were beginning to emerge for a CAN\$1.7 billion motorway that, if built, will run along the lagg zone of a large proportion of the Bog. Communities and individuals, local and national, have become concerned as to the impact of this new infrastructure and the ensuing traffic impacts – as well as visual, aural and other impacts. Thus, a large-scale, concerted effort is currently underway to prevent this new infrastructural damage to the Bog. As mentioned, the Bog has no legal designation and thus there is little basis for conservation or protection of any part of Burns Bog. Socio-economic assessments of un-managed, non-industrial peatlands do not exist and there are no valuation studies of Burns Bog, particularly in relation to its unique urban setting. The positive health impacts of natural areas are often described from an economic (Chiesura and de Groot, 2003) and public health (Jackson, 2003) perspective. Though not assessed for peatlands, a large literature exists on the non-market benefits of urban green areas. For example, Gobster and Westphal (2004) illustrate the high social value of greenways in other north American cities. However, little is available to gauge the values of restored peatlands in any landscape. Of the few studies that do exist MacPhearson and Macleod (2006) illustrate the social and financial benefits of

peatland restoration to local communities and their attractiveness to tourism. With that in mind, it has been shown that ecotourism is the fastest growing sector in the tourist industry (Fennell, 2003 p. 83) and because Burns Bog is located in an urban landscape, there would be little to dispute its potential for tourism development. It is known that ecotourism can assist in the conservation of habitats in three different ways: 1.) the generation of capital to enable conservation management and restoration, 2.) the augmentation of local communities by being involved directly or indirectly in the conservation or restoration of habitats, and 3.) the creation of wider awareness (learning) that can benefit other areas of conservation (Goodwin, 1996). This potential would be severely restrained with any large infrastructural development such as the proposed motorway, and in the light of no socio-economic counter-arguments there is now a great risk to more than just the peatland. Proximity to a large city such as Vancouver would make any large open green space valuable for its non-market benefits (tourism, public health and well-being) which, in itself, is a compelling argument for restoration of the natural capital of Burns Bog.

Stakeholder issues

In 2000 an unpublished survey of attitudes showed an 80% agreement by local residential stakeholders on the conservation of Burns Bog. From this simple survey it is evident that local residents are willing to see the Bog retained, but in what format is unknown. Collier and Scott (2008) illustrate that local residents in peatland areas have a high regard for bogs, even damaged bogs, and prefer amenity and biodiversity options to infrastructural or industrial afteruse options. Further, Collier *et al.* (this volume) show that non-use values may be used in afteruse planning and that there is a high willingness to participate in such ventures. This willingness to participate (essentially volunteering) creates capacity in social capital and if this is related to a restoration project there is a convergence of social and ecological interests – ‘focality’ (Higgs, 2003). Though the Burns Bog Ecosystem Review (2000) consulted widely it was only in relation to obtaining opinion and not eliciting planning issues nor any collaboration in restoration. Collaborative planning is at the cornerstone of modern planning (Healey, 2006) and when it comes to landscape planning profound stakeholder consultations and participatory management are highly valuable (Selman, 2004). That considerable social interest exists among local stakeholders could be indicating the degree of collaboration and participation may be available to planners and land managers. Rehabilitation of damaged landscapes using local volunteers, for example, has been shown to be successful (socially and ecologically) (Grese *et al.*, 2000; McGhee *et al.*, 2007).

Discussion

Policy implications

An ideal opportunity has now presented itself for this unique landscape to become an valuable and valued habitat, an active C sink and a civic amenity, concurrently. The Burns Bog Conservation Society has long lobbied for such an action. Experience on regenerating peatlands elsewhere shows that safe access can be created without jeopardising ecological integrity (Egan, 1999). The social-ecological rehabilitation of Burns Bog also presents an opportunity to put collaborative planning into practice in order to secure the numerous benefits that such a landscape presents. Ecological restoration based on Traditional Ecological Knowledge can restore the relationships between (modern and ancient) peoples and the Bog. This could, in turn, create employment and educational opportunities. Creating policy instruments for this would not be difficult and, if creative enough, Burns Bog would become a unique example of an active social-ecological system in a modern urban landscape, which would exemplify wise afteruse.

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