The Integration of Restoration Options for Ecological and Recreational Resources in Sumner

Contents

Executive Summary

With an exponentially growing global population and increasing rates of urban development, issues surrounding environmental degradation are paramount. The restoration of various ecological resources is central in providing for a healthy environment for future generations that can support the increasing need for natural, life-supporting resources.

The research questions used to focus this report were:

- *What are the best restoration options for the three ecological resources; coastal zone, riparian zone, and ecological corridors?*
- *Can they be effectively integrated with each other and recreational tracks, and if so, what is the best scenario?*

Methodology included

Introduction

This report takes a multi faceted approach to the questions surrounding the restoration of different ecological resources, and the integration that is central to its success. The focus is divided between investigating the restoration options for the coastal, riparian, and neighbouring terrestrial resources in the Sumner valley catchment area, and the integration of these with each other and tracks as a recreational resource.

Restoration is defined as "the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. It is an intentional activity that initiates or accelerates ecosystem recovery with respect to its health (functional processes), integrity (species composition and community structure), and sustainability (resistance to disturbance and resilience)" (Martinez, Gallego-Fernandez et al. 2013). In current times, severely degraded environments characterise much of the earth's surface and all of its urban landscapes. As a result, the restoration of ecological resources is imperative to the survival of all living organisms.

Greenways are defined as strips of undeveloped land in or near urban areas, set aside for recreational use or environmental protection. Within the context of this research, greenways are synonymous with "ecological corridors", focussing on the ecological benefits of integrating otherwise isolated habitats, in order to foster the connectivity necessary for the sustainability of healthy ecosystems.

The term "integration" refers to a number of different components within this report. Firstly, the integration of physical and social science in the form of integrated resource management is an imperative component of environmental restoration in present times. It5(s, i)7(n)-4( )6(o

Literature Review

Coastal Zone Restoration Options

dependent on soils, geomorphology, hydrology, biological processes (e.g., microbial activity), vegetation type, steepness of slopes, annual rainfall, level of pollution, type of pollutants, surrounding land uses and bu er width (Brennen & Culverwell, 2004).

Overall Impacts of tracks on the environment

The impacts of tracks on the surrounding environment are wide and varied, and range from the impacts of the initial track construction, through to the sustained impact of trampling as a result of track use. Impacts include: littering, soil compaction, increased runoff and erosion, reduced nutrient flows, reduced vegetation height and cover, exposure of roots, change in composition of species, and spreading of noxious weeds

the remaining detrimental effects for vegetation would have numerous flow on consequences for such a fragile system.

Recommendations for Environmentally Sustainable Track Building

Track design and management are much larger factors in environmental degradation than the type or quantity of use. Many studies have demonstrated that poorly designed or located tracks are the biggest cause of negative impacts.

Methods

Methods for this report were divided into 3 components. Firstly, an in depth literature research base was formed on all elements of the focus questions. This research looked into the theory behind the need for restoration throughout the coastal, riparian and terrestrial ecological zones, and the best approaches to implementation. It also thoroalogrirstIg TJETBT40.50 1 72.0ry

Results and Discussion

Coastal Zone

As shown by Figure 2, restoration of the coastal zone is limited to areas with less human modification. From Cave Rock, along the length of the esplanade to the eastern extent of Scarborough, the beach is heavily modified by concrete revetments and rock walls. West of Cave Rock, between “On the Beach” Cafe, and the pre-earthquake site of Sumner Surf Club, dune restoration is currently underway by the Sumner Community Group. The dunes have been partially re-vegetated with native species and fenced to avoid excess foot traffic. Between the surf club and the western extent of Sumner beach at the estuary mouth, the upper reaches of the beach, where dunes previously would have stood, have been engineered with a small rise of 1-1.5m to the road. The rise consists of a rock wall, with windblown sand and a mix of native and exotic vegetation.

Fig. 2. Dunes Currently Present in Sumner.(Sumner Community Group 2013)

Recommendations for dune restoration in Sumner depend heavily on the sediment budget of the beach. Sumner is known to have a dramatically fluctuating beach composition, at times with sediment supply appearing abundant and at other times greatly eroded. Therefore, more research would need to be carried out as to the volume of sand nourishment that would be required to support the development of larger dunes in a sustainable manner. Literature on neighbouring Pegasus Bay beaches state

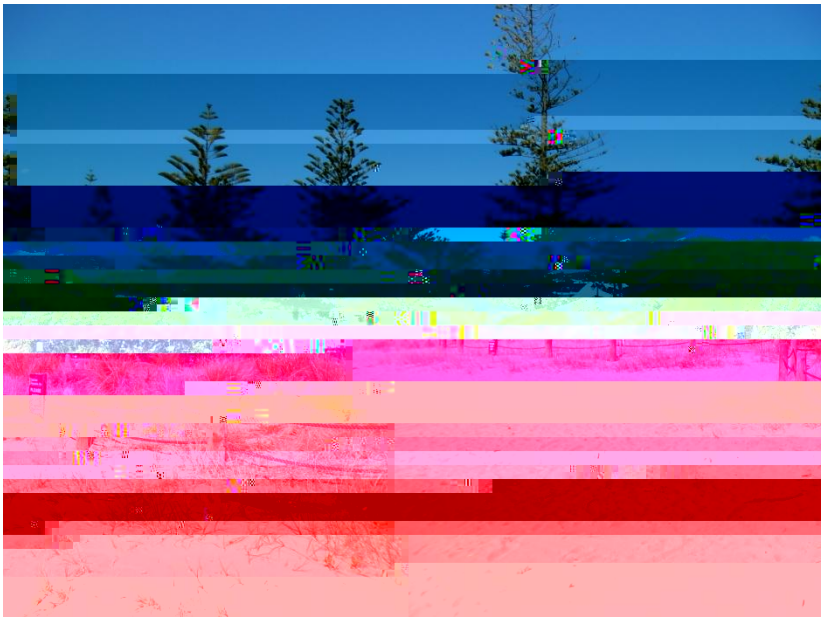

Fig. 3. Current State of Dunes.

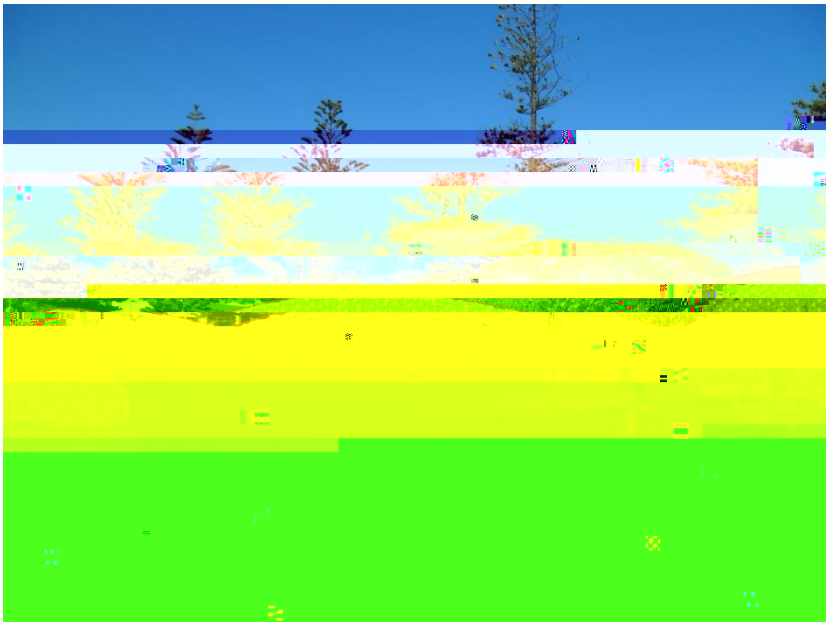

Fig. 4. Proposed Dunes.

Riparian Zone

The Sumner stream is the one dominant waterway running through the township. Its source is a spring located in the upper catchment area near the junction of Evans Pass and Summit Road. Near its origin, there are some small pockets of restored native vegetation as visible in Figure 6. Its upper section flows through rural agricultural land, predominantly sparsely vegetated sheep pasture, with the addition of streamside native flax, planted as part of current restoration projects underway by the Christchurch City Council (CCC). As it reaches the outskirts of the Sumner township, it is well vegetated with riparian zones also restored

Opportunities for Greenways and the Restoration of Tracks

The majority of the tracks in the Sumner Valley are completely un-vegetated at their edges, passing predominantly through sheep pasture. This raises a number of concerns from an environmental standpoint including increased erosion, lack of habitat and connectivity between other habitats for native species, and the potential for users to veer off trail where lack of vegetation fails to restrict foot traffic to the track itself. There are however many positive signs of restoration initiated by the CCC, including the planting of native Harakeke (*Phormium tenax)* along the length of the stream and 3 large fenced areas of native regenerative forest surrounding areas of the tracks. Recommendations therefore

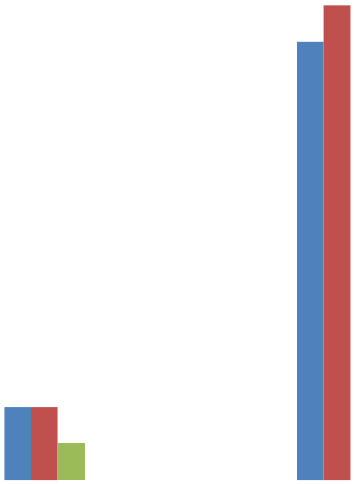

Fig. 7. Community perceptions of restoration projects.

Informal interviews with each participant indicated that while visitors to the area were generally indifferent to the concepts of restoration, Sumner locals were enthusiastic. However, an overall theme was that many didn't know what was currently being done, or what the current states of the various ecological resources are, and hence the need to restore them. Consequently, views were polarised between being indifferent, and enthusiastic about the potential for restoration.

Acknowledgements

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McCoy, J., Osama, A., Roberts, L., Shapcott, J. Shurrock, R. (2010). Integrated Catchment

Appendix

Community Survey

1. Have you heard of Habitat Sumner?

Yes	No

2.

d) The regeneration and formation of native corridors around tracks?

Very unhappy	Unhappy	Indifferent	Happy	Very happy

7. Are you a Sumner local?

Local	Visitor

8. Which age bracket do you fit in to?

<18	19-29	30-39	40-49	50+

9. What is your gender?

Male	Female

10. Any extra thoughts or comments?