



THE VALUE OF RECREATION IN WHAKAREWAREWA FOREST, ROTORUA

Summary

The objective of this study was to estimate the economic value that mountain bikers and walkers place on recreation in a planted forest on the fringe of Rotorua; Whakarewarewa forest. We used data collected from face-to-face interviews of 709 forest users to estimate these values. The median economic value of the forest-related recreation under current management, estimated using the travel cost method, is \$5.2 million per year from walking and \$9.4 million per year from mountain biking. As estimated here, these values are the maximum amount walkers or mountain bikers visiting the forest spend on vehicle and bike costs, and travel time, visiting the forest.

Author Bhubaneswor Dhakal, Richard Yao, James Turner and Tim Barnard (Scion)
Contact: james.turner@scionresearch.com

Introduction

Although planted forests account for only 7% of New Zealand's land area, they provide important multiple benefits: productive (timber, fibre, firewood), supportive (biodiversity conservation, soil stabilisation), assimilative (carbon sequestration), and social (recreational, aesthetic, cultural identity). The value of these benefits is increasing with the growing degradation and scarcity of natural resources and increased environmental awareness.

Most non-timber benefits from planted forests are not traded in markets. As such, users demand and realise these benefits at no cost, while forest owners have little economic incentive to include them in management decisions. In addition, policy makers face the problem of allocating scarce resources to promote non-timber benefits without information on

the full value of these benefits. It is therefore essential to estimate the economic value of non-timber benefits from planted forests to ensure sound decision-making.

The purpose of the study described here was to estimate the economic benefit of one important non-timber benefit from planted forests, recreation; targeting mountain bikers and walkers in the area of Whakarewarewa Forest managed for timber production (Figure 1). Our study addressed three questions:

1. What value do forest users place on recreation in the forest?
2. What particular features (if any) would users prefer to see improved in the forest?
3. Would forest users visit more frequently if these forest features were modified?

Figure 1: Recreational activities in Whakarewarewa forest



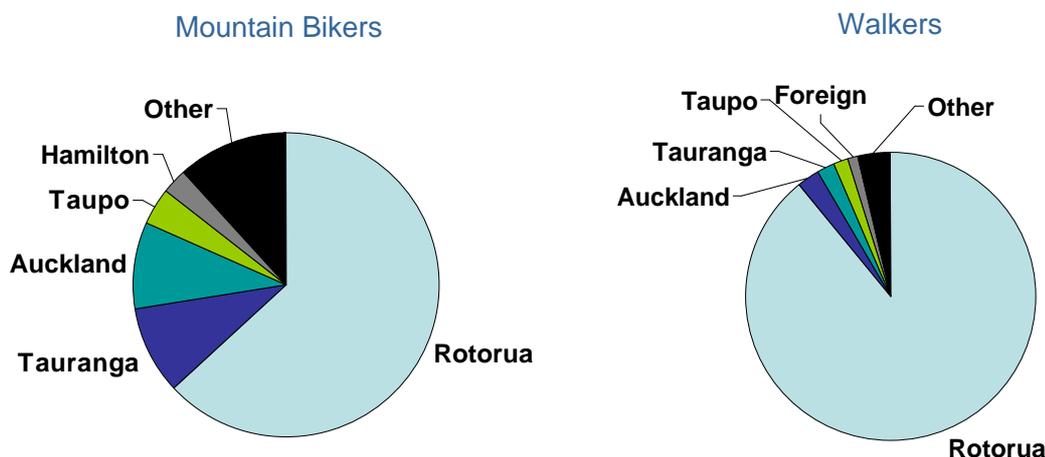


Because the economic value of recreation in the forest cannot be directly obtained from market transactions, such as entry fees, we used non-market valuation to estimate these values.

Results

A large proportion of people surveyed were from Rotorua; 89% of walkers and 63% of mountain bikers (Figure 2). A small number of visitors travelled over 200 km to get to the forest; 4% of walkers and 21% of mountain bikers. This resulted in a small number of respondents making an unusually high number of visits, while a few others had a high cost of travel associated with visiting the forest.

Figure 2: Where are visitors to Whakarewarewa forest from?



Value of recreation in Whakarewarewa forest

Results from the travel cost method combined with estimates of the number of visits to Whakarewarewa forest suggest that the median economic benefit of the forest could be \$5.2 million from walking and \$9.4 million from mountain biking. This estimated benefit is an economic measure of the overall enjoyment users gain from visiting Whakarewarewa forest. The estimated recreational benefit from mountain biking is almost five times the annual revenue from timber production in the forest based on indicative planted forest costs and revenues (Turner et al. 2008).



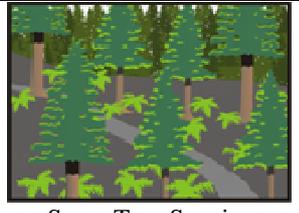
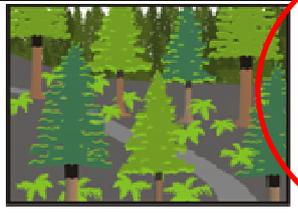
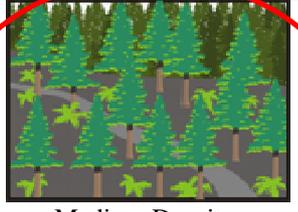
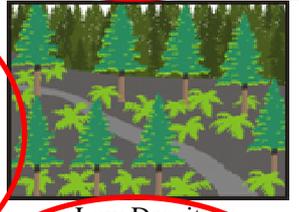
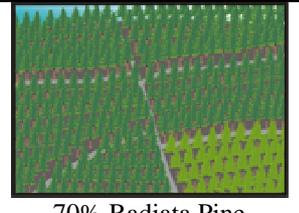
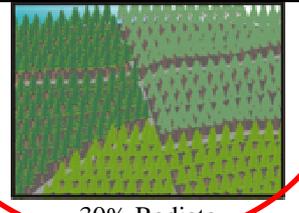
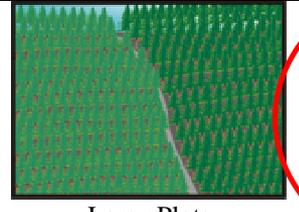
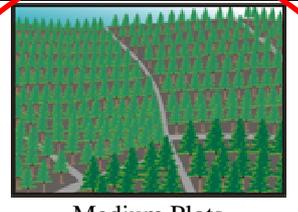
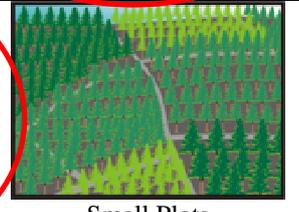
Attribute	Status Quo Level	Changed Level 1	Changed Level 2
Tree ages in the forest	 Same Age Trees	 Two Age Groups	 Three or More Age Groups
Species in the forest	 Same Tree Species	 Two Tree Species	 Three or More Tree Species
Tree density in the forest	 High Density, Poor Understorey	 Medium Density, Medium Understorey	 Low Density, Rich Understorey
Species in the forest landscape	 70% Radiata Pine	 50% Radiata Pine	 30% Radiata
Plot sizes in the forest landscape	 Large Plots (Greater than 30 ha)	 Medium Plots (about 20ha)	 Small Plots (less than 10 ha)

Figure 3: List of forest features and levels. The feature levels in the first column represent the current management of Whakarewarewa forest. Circled feature levels are those preferred by forest users



Preference for changes in forest features

Walkers showed a significant preference for a change from the status quo in all of the forest features considered except for the size of management blocks (Figure 3). The preference was for more species and tree ages within stands and less radiata pine in the landscape. Interestingly walkers preferred medium stocked stands to those more or less stocked. A possible reason for this could be that medium stocked stands provide the right space for internal views within the stand. Mountain bikers showed a similar though weaker preference for a change from the current forest features.

Value of changes in forest features

Study results suggest that over two-thirds of users are unlikely to increase their number of visits or amount of time spent in Whakarewarewa forest were the forest managed for their preferred forest features (Figure 3). A possible reason for this is that the changes in forest features studied are valuable for adding amenity and natural values to the forest. Only a few people (4.8% of walkers and 0.6% of mountain bikers) stated this as their main objective in visiting the forest. Most of the respondents visited the forest either for exercise or fun.

Conclusions

It is important to note that the results of this study do not imply that charging the public for access to Whakarewarewa forest would yield to the forest owners the economic benefit estimated here. The value does, however, allow a comparison of the value of the forest for recreation in addition to that from timber production. The value for mountain biking was found to be almost five times the annual revenue from timber from the forest based on indicative planted forest costs and revenues. The extent to which this value could be realised if appropriate systems were in place to generate revenue from recreation is a subject of future studies.

References

Turner, J.A., West, G.G. Dungey, H.S., Wakelin, S.J., Maclaren, J.P., Adams, T.H., and Silcock, P.A. 2008. Managing New Zealand planted forests for carbon – a review of selected management scenarios and identification of knowledge gaps. *A Report Prepared for the Ministry of Agriculture and Forestry by Scion*. Ministry of Agriculture and Forestry, Wellington. <http://www.maf.govt.nz/climatechange/slm/grants/research/2007-08/2008-09-summary.htm> (accessed 19 August 2009)