Biophysical impacts and psychosocial experiences associated with use of selected long-distance walking tracks within the Wet Tropics region of North Queensland, Australia

Thesis submitted by

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FRONTISPIECE

The Mt Bartle Frere Track presented plenty of physical challenge during fieldwork.

'Why do people hike and backpack? Why spend money on equipment and travel in order to get hungry, lost, bitten by bugs and risk getting sore feet?
(Kaplan and Kaplan, 1989. p. 117)

DEDICATION

This thesis is dedicated to all the people of the earth who enjoy long-distance walking (variously known as tramping, hiking, trekking, etc.). I trust you will always have access to pristine wilderness areas to enjoy this noble recreational pursuit.

This thesis is also dedicated to my son Adam – I look forward to the day when you are old enough to come on some overnight hikes and share a campfire with me!

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DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education. Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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Nigel G Young Date

DECLARATION ON ETHICS

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the *National Statement on Ethics Conduct in Research Involving Humans* (1999), the *Joint NHMRC/AVCC Statement and Guidelines on Research Practice* (1997), the *James Cook University Policy on Experimentation Ethics, Standard Practices and Guidelines* (2001), and the *James Cook University Statement and Guidelines on Research Practice* (2001). The proposed research methodology received clearance from the James Cook University Experimentation Ethics Review Committee (approval number H1655).

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Nigel G Young Date

STATEMENT ON THE CONTRIBUTION OF OTHERS

Stipend Support:

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ABSTRACT

This multidisciplinary doctoral research project investigated *visitor impacts* and *visitor experiences* associated with two long-distance walking tracks within the Wet Tropics region of North Queensland, Australia. A literature review demonstrated there has been minimal research conducted to date in relation to the *biophysical impacts* and *psychosocial experiences* of long-distance walkers in all locations, but particularly within the Wet Tropics region. Since encounters between visitors and a recreational site have the potential to generate either positive or negative biophysical and social impacts at the setting, in addition to positive or negative psychological impacts for the individual user (Bentrupperbäumer and Reser, 2000), this project represented a timely attempt to examine both research avenues from theoretical and applied perspectives.

Both long-distance walking tracks investigated in this research were located within World Heritage listed protected areas. World Heritage listing is an acknowledgement that locations possess international significance and places particular responsibilities upon management agencies to *conserve*, *present*, *rehabilitate*, and *transmit* their attributes to future generations (Wet Tropics Management Authority, 2000). The Mt Bartle Frere Track is situated within Wooroonooran National Park in the Wet Tropics of Queensland World Heritage Area, while the Thorsborne Trail is located on Hinchinbrook Island National Park within the Great Barrier Reef World Heritage Area.

This research utilised a range of methodologies derived from both the natural and social sciences, and a *human-environment transactional model* specifically developed for outdoor recreation settings (Bentrupperbäumer and Reser, 2000, 2002) was adopted as the overarching theoretical and analytical framework for the study. *Biophysical impacts* were assessed using rapid assessment methodology following the selection of a range of suitable environmental indicators. Impacts were recorded within one metre square quadrats and along 20 metre linear transects at 100 sampling points on each track. Spatial comparisons were made among sampling zones (tread, buffer, and control), and vegetation types on each track. Temporal comparisons were made between wet and dry season results. *Psychosocial experiences* were assessed using a self-report questionnaire administered to hikers via a range of distribution methods over a one year period using a convenience sampling strategy.

Spatial comparisons indicated that biophysical impacts were predominantly confined to the tread and buffer zones, and were more prevalent in proximity to locations where hikers congregated such as camping grounds, lookouts, and swimming holes. The biophysical impacts that were of most concern on the Mt Bartle Frere Track included track widening, exposed mineral soil, erosion, and the inadequate disposal of human body waste. Trampling impacts of most concern on the Thorsborne Trail included exposed mineral soil, human littering, human vegetation damage, and social trails.

Temporal comparisons of biophysical impacts between wet and dry season sampling suggested that some track widening occurred during the wet season on both tracks, presumably as a consequence of hikers attempting to avoid muddy or waterlogged track sections. Exposed mineral soil was most prevalent during the dry season on both tracks when visitation levels were highest. Mean organic litter depth was deepest during the wet season on both tracks, with significant seasonal reductions in litter being recorded on the Mt Bartle Frere Track. Incidences of human vegetation damage were also more widespread during the wet season on both tracks. Seasonal comparisons of biophysical impacts were discussed from a recreation ecology perspective using the concepts of *resistance* and *resilience*.

Psychosocial experience surveys (N = 623) provided a number of insights in relation to the profile of long-distance walkers using these two tracks. Respondents were typically young, well educated, highly experienced in the use of long-distance tracks, and primarily had experiential-based motivations for undertaking their walk. A substantial proportion of respondents were either repeat visitors or had learnt about the existence of their respective tracks via word of mouth, while only a minority of hikers had used formal information sources such as visitor information centres and the internet.

While a majority of respondents positively appraised the natural, built, and social environments they encountered, many also identified a number of specific factors that had detracted from their experiences. Respondents from the Mt Bartle Frere Track were most concerned about the prevalence of soil erosion, feral animals, and the lack of track marking to assist wayfinding. Thorsborne Trail respondents were most concerned about the number of other people they encountered in camp grounds, encounters with large

groups, human litter, and feral animals. Although a majority of respondents from both locations approved of current track management, many indicated their support for a range of possible management interventions. Most respondents from each track were generally satisfied with their overall experience and the vast majority would be willing to undertake their respective hikes again, although satisfaction levels were higher among Thorsborne Trail respondents.

This research has enhanced theoretical understandings of human-environment transactions within a long-distance walking track context. These were explored in some detail using a conceptual mapping progression that compared the relative contributions that different domains within the human-environment transactional model make to experiences within different outdoor recreation settings. The research also made a number of scientific contributions to the human-environment transactional model through reaffirming and extending the model's core aspects of multidisciplinarity, simultaneous assessment, multidimensionality, reciprocity and interconnectedness. Use of the human-environment transactional model has also provided a number of applied insights that may assist managers to better understand the linkages that exist between *impact upon environment* and *impact upon people* and the interconnectedness of human behaviour/experience/biophysical impact.

The research has enabled the formulation of a number of general principles that will hopefully assist management of other long-distance walking tracks within the Wet Tropics region and also generated a number of specific *site* and *visitor management* recommendations for each track, some of which have already been implemented. The results obtained from these tracks can be cautiously extrapolated to other long-distance walking tracks within tropical rainforest environments provided that site-specific factors are taken into consideration.

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