

**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

Nigel Gordon Ryan YOUNG  
BA (Hons) *James Cook University*

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James Cook University of North Queensland, Australia

## 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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## STATEMENT OF SOURCES

### 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 Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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## 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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Date

## STATEMENT ON THE CONTRIBUTION OF OTHERS

### **Stipend Support:**

‘Atherton Tablelands Environmental Research Scholarship’.

### **Supervision:**

Dr Joan Bentrupperbäumer, Professor Steve Turton, and Professor David Gillieson (James Cook University).

### **Statistical Support:**

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### **Research Assistance:**

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### **Other Assistance:**

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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 multidisciplinary, 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.

## TABLE OF CONTENTS

Frontispiece.....	ii
Dedication.....	iii
Statement of Access.....	iv
Statement of Sources.....	v
Declaration on Ethics.....	vi
Statement of Contribution by Others.....	vii
Acknowledgements.....	viii
Abstract.....	x
Table of Contents.....	xiii
List of Appendices.....	xviii
List of Tables.....	xix
List of Figures.....	xxii
List of Plates.....	xxvi
<b>CHAPTER 1 – INTRODUCTION.....</b>	<b>1</b>
1.1 Background to this Study.....	1
1.2 Research Goals.....	3
1.3 Research Methodologies.....	4
1.4 Research Questions.....	5
1.5 Synopsis of Thesis Chapters.....	6
1.6 Tropical Cyclone Larry.....	8
<b>CHAPTER 2 – LITERATURE REVIEW.....</b>	<b>9</b>
2.1 Introduction.....	9
2.2 Protected Area Management Overview.....	12
2.2.1 Increasing visitation to protected areas.....	13
2.2.2 Principles for managing visitation within protected areas.....	15
2.2.3 Integrated protected area visitor planning frameworks.....	16
2.2.4 Protected area management techniques and strategies.....	24
2.2.5 Protected area management techniques for the Wet Tropics region.....	29
2.3 People – Environment Interactions.....	32
2.3.1 Human-environment transactional models.....	33
2.3.2 Experiencing wilderness.....	38
2.3.3 Personal benefits resulting from people-environment interactions.....	39
2.3.4 Theoretical explanations for people-environment benefits.....	41
2.3.5 Constraints upon visitor behaviour.....	44
2.3.6 People in space and time.....	46
2.4 Biophysical Impacts of Visitation and Use.....	49
2.4.1 Resistance and resilience.....	50
2.4.2 Extent and timing of recreational activities.....	52
2.4.3 Impacts associated with inappropriate activities and behaviour.....	54
2.4.4 Potential impacts of visitation upon soil.....	55
2.4.5 Potential impacts of visitation upon vegetation.....	62
2.4.6 Potential impacts of visitation upon water.....	68
2.4.7 Potential impacts of visitation upon wildlife.....	70
2.5 Psychosocial Experiences of Visitors.....	72
2.5.1 Psychosocial research for recreational management.....	73
2.5.2 Characteristics of visitors to natural recreation areas.....	77

2.5.3 Psychological and behavioural responses.....	80
2.5.3.1 Visitor interaction with the natural environment.....	80
2.5.3.2 Visitor interactions with the built environment.....	85
2.5.3.3 Visitor interaction with the social environment.....	88
2.5.3.4 Visitor perceptions of site management.....	95
2.5.3.5 Psychological domain.....	98
2.6 Conceptual and Theoretical Orientation of the Thesis.....	103
2.7 Summary.....	107
<b>CHAPTER 3 – STUDY AREA.....</b>	<b>108</b>
3.1 Introduction.....	108
3.2 The Wet Tropics Region of North Queensland.....	109
3.2.1 Regional climate.....	111
3.2.2 Conservation and cultural heritage attributes.....	112
3.2.3 Threatening processes within the Wet Tropics region.....	115
3.2.4 Tourism and recreation within the Wet Tropics region.....	116
3.2.5 Demand for long-distance walking within the Wet Tropics region.....	117
3.2.6 Management of long-distance walking within the Wet Tropics region...	119
3.3 The Mount Bartle Frere Track.....	122
3.3.1 Location.....	122
3.3.2 Local weather conditions.....	124
3.3.3 Soils, geology and landforms.....	125
3.3.4 Flora and fauna.....	126
3.3.5 Historical and cultural attributes.....	127
3.3.6 Existing management arrangements and visitation levels.....	127
3.4 The Thorsborne Trail.....	129
3.4.1 Location.....	129
3.4.2 Local weather conditions.....	131
3.4.3 Soils, geology and landforms.....	131
3.4.4 Flora and fauna.....	133
3.4.5 Historical and cultural attributes.....	134
3.4.6 Existing management arrangements and visitation levels.....	135
3.5 Summary.....	136
<b>CHAPTER 4 – METHODOLOGY.....</b>	<b>137</b>
4.1 Introduction.....	137
4.2 Biophysical Impact Assessment Methodology.....	138
4.2.1 Research design.....	138
4.2.2 Sampling methodology.....	143
4.2.3 Quadrat sampling.....	146
4.2.4 Transect sampling.....	149
4.2.5 Data collection.....	150
4.2.6 Data analysis.....	151
4.3 Psychosocial Experience Assessment Methodology.....	154
4.3.1 Research design.....	154
4.3.2 Sampling methodology.....	155
4.3.3 Survey instrument.....	156
4.3.4 Survey distribution.....	163
4.3.5 Data Analysis.....	164
4.4 Summary.....	168

<b>CHAPTER 5 – BIOPHYSICAL IMPACTS.....</b>	<b>169</b>
5.1 Introduction.....	169
5.2 Spatial Comparisons.....	170
5.2.1 Track topography.....	170
5.2.2 Track width.....	173
5.2.3 Ground cover composition within quadrats.....	175
5.2.3.1 Exposed mineral soil.....	175
5.2.3.2 Leaf litter.....	178
5.2.3.3 Tree roots.....	180
5.2.3.4 Rocks.....	182
5.2.3.5 Woody debris.....	184
5.2.3.6 Living vegetation.....	186
5.2.4 Organic litter depth.....	188
5.2.5 Canopy cover.....	191
5.2.6 Seedling density.....	193
5.2.7 Soil erosion.....	196
5.2.8 Weeds.....	198
5.2.9 Feral animals.....	199
5.2.10 Human litter.....	200
5.2.11 Human body waste.....	201
5.2.12 Social trails.....	202
5.2.13 Vegetation damage.....	202
5.2.14 Additional track problems.....	204
5.3 Seasonal Comparisons.....	205
5.3.1 Track width.....	206
5.3.2 Ground cover composition within quadrats.....	206
5.3.2.1 Exposed mineral soil.....	207
5.3.2.2 Leaf litter.....	208
5.3.2.3 Tree roots.....	209
5.3.2.4 Rocks.....	209
5.3.2.5 Woody debris.....	210
5.3.2.6 Living vegetation.....	211
5.3.3 Organic litter depth.....	212
5.3.4 Canopy cover.....	213
5.3.5 Seedling density.....	214
5.3.6 Social trails, human litter, and body waste.....	215
5.3.7 Vegetation damage.....	216
5.3.8 Additional track problems.....	217
5.4 Discussion.....	218
5.4.1 Introduction.....	218
5.4.2 Spatial variations in biophysical impacts.....	218
5.4.3 Seasonal variations in biophysical impacts.....	229
5.5 Summary.....	235
<b>CHAPTER 6 – PSYCHOSOCIAL EXPERIENCES.....</b>	<b>236</b>
6.1 Introduction.....	236
6.2 Sampling Characteristics.....	238
6.2.1 Sampling period.....	238
6.2.2 Target population.....	238

6.2.3	Survey response rates.....	238
6.2.4	Sampling ratio.....	239
6.2.5	Sample validity.....	241
6.2.6	Reasons for non-participation.....	241
6.2.7	Rejection of surveys.....	241
6.3	Respondent Characteristics.....	242
6.3.1	Place of residence.....	242
6.3.2	Gender.....	244
6.3.3	Age.....	244
6.3.4	Education.....	245
6.3.5	Perceived level of physical fitness.....	245
6.3.6	Long-distance walking track experience.....	246
6.3.7	Logistical arrangements.....	247
6.3.8	Motivations: reasons for undertaking each walk.....	251
6.3.9	Activities that hikers wanted to do but could not.....	254
6.4	Appraisal of Environment and Management.....	256
6.4.1	Appraisal of the natural environment.....	256
6.4.2	Appraisal of the social environment.....	259
6.4.3	Appraisal of the built environment.....	261
6.4.4	Perceptions of current track management.....	265
6.4.5	Preferences for future management action.....	266
6.5	Satisfaction and Overall Quality of Experience.....	268
6.5.1	Satisfaction.....	268
6.5.2	Predictors of satisfaction.....	270
6.5.3	Factors that increased or enhanced enjoyment.....	273
6.5.4	Factors that decreased or detracted from enjoyment.....	274
6.5.5	Experiences of fear.....	275
6.5.6	Perceptions of physical difficulty.....	277
6.5.7	Intentions to complete the walk again or recommend to others.....	278
6.5.8	Temperature and weather conditions.....	278
6.6	Discussion.....	279
6.6.1	Introduction.....	279
6.6.2	Key profile characteristics of long-distance walking track users.....	279
6.6.2.1	Key demographic characteristics.....	280
6.6.2.2	Logistic arrangements.....	285
6.6.2.3	Motivations: Reasons for undertaking the walks.....	288
6.6.3	Visitor appraisal of environments and track management.....	291
6.6.3.1	Natural environment appraisal.....	291
6.6.3.2	Social environment appraisal.....	293
6.6.3.3	Built environment appraisal.....	295
6.6.3.4	Track management.....	297
6.6.4	Satisfaction and overall quality of experience.....	299
6.6.4.1	Satisfaction.....	299
6.6.4.2	Factors that enhanced or detracted from enjoyment.....	301
6.6.4.3	Experiences of fear.....	302
6.6.4.4	Perceptions of physical difficulty.....	304
6.7	Summary.....	304

<b>CHAPTER 7 – SYNTHESIS.....</b>	<b>306</b>
7.1 Introduction.....	306
7.2 Human-Environment Transactional Model Revisited.....	309
7.2.1 Evaluating the use of human-environment transactional models.....	309
7.2.2 Conceptual mapping of human-environment transactions.....	313
7.2.3 Research contribution of and to the human-environment transactional model.....	317
7.3 Resistance and Resilience Revisited.....	321
7.4 Applied Management Implications.....	324
7.4.1 General recommendations for the management of long-distance walking tracks.....	324
7.4.2 Site-specific management recommendations for the Mt Bartle Frere Track.....	329
7.4.3 Site-specific management recommendations for the Thorsborne Trail...	333
7.5 Summary.....	339
<b>CHAPTER 8 – CONCLUSIONS.....</b>	<b>340</b>
8.1 Introduction.....	340
8.2 Principal Research Findings.....	341
8.3 Limitations of this Research.....	343
8.4 Recommendations for Future Research.....	344
<b>REFERENCES.....</b>	<b>347</b>
<b>APPENDICES.....</b>	<b>373</b>

## LIST OF APPENDICES

Appendix 1	Wet Tropics walking track classification system.	373
Appendix 2	Quadrat proforma.	375
Appendix 3	Transect proforma.	376
Appendix 4	Code book for measurements within quadrats.	377
Appendix 5	Code book for measurements along transects.	379
Appendix 6	Long-distance walking track visitor survey.	380
Appendix 7	Code book visitor surveys.	387
Appendix 8	Seasonal variation in monthly rainfall and the number of days when rain fell recorded at the closest available weather station.	405
Appendix 9	Country of residence data provided by international hikers.	406
Appendix 10	Factor analyses conducted on psychosocial experience data.	407
Appendix 11	Additional visitor facilities/information respondents would support being established/provided in association with each long-distance walking track.	413
Appendix 12	Independent variables used in a simultaneous multiple regression analyses of visitor satisfaction (dependent variable) for each track.	414
Appendix 13	Factors that increased enjoyment on both walking tracks.	415
Appendix 14	Factors that decreased enjoyment on both walking tracks.	416
Appendix 15	Intentions to complete the walk again or recommend to others.	417
Appendix 16	Temperature and weather conditions experienced during walk.	418
Appendix 17	Case study: relationship between level of previous experience and motivations (specifically <i>to be in and enjoy wilderness</i> ).	419
Appendix 18	Case study: relationship between previous experience and respondent support for additional directional signage and maps.	420

## LIST OF TABLES

Table 2.1	Principles for managing tourism and recreation within protected areas.	16
Table 2.2	Personal benefits derived from time spent in wilderness areas.	41
Table 2.3	Potential spatial and temporal variations in interactions with the various environments during a long-distance walk.	48
Table 2.4	Ecosystems with varying resistance and resilience to trampling.	50
Table 2.5	Resistance and resilience characteristics attributed to tropical rainforest.	52
Table 2.6	Potential adverse ecological consequences associated with soil trampling.	56
Table 2.7	Potential adverse ecological consequences of vegetation trampling.	63
Table 2.8	Plant morphological features that influence resistance and resilience.	65
Table 2.9	Potential adverse ecological consequences of visitation upon water.	68
Table 2.10	Potential adverse ecological consequences of visitation upon wildlife.	71
Table 3.1	Importance of the Wet Tropics region to Australia's biodiversity.	113
Table 3.2	Rare and threatened flora and fauna species in the Wet Tropics region.	114
Table 3.3	Classification of walking tracks within the Wet Tropics region.	118
Table 3.4	Regulations governing the management of the two long-distance walking tracks under investigation.	121
Table 3.5	Mt Bartle Frere Track annual visitation levels compiled from data supplied by the Queensland Parks and Wildlife Service, Lake Eacham and Josephine Falls.	128
Table 3.6	Thorsborne Trail annual visitation levels compiled from data supplied by the Queensland Parks and Wildlife Service, Cardwell.	135
Table 4.1	Seven desirable features of environmental impact indicators.	140
Table 4.2	Stratification of sampling points according to vegetation type.	144
Table 4.3	Quadrat biophysical impact indicators.	148

Table 4.4	Transect biophysical impact indicators.	150
Table 4.5	A thematic layout of the psychosocial experience questionnaire.	159
Table 4.6	Survey distribution methods.	163
Table 5.1	Descriptive analyses of walking track widths (metres).	173
Table 5.2	Comparative analyses of spatial variation in exposed mineral soil associated with sampling zone quadrats.	176
Table 5.3	Comparative analyses of spatial variation in leaf litter associated with quadrat sampling zones.	179
Table 5.4	Comparative analyses of spatial variation in tree roots associated with quadrat sampling zones.	181
Table 5.5	Comparative analyses of spatial variation in woody debris associated with quadrat sampling zones.	185
Table 5.6	Comparative analyses of spatial variation in living vegetation associated with quadrat sampling zones.	187
Table 5.7	Comparative analyses of spatial variation in organic litter depth associated with quadrat sampling zones.	189
Table 5.8	Comparative analyses of spatial variation in canopy cover associated with quadrat sampling zones.	192
Table 5.9	Comparative analyses of spatial variation in seedling density associated with quadrat sampling zones.	194
Table 5.10	Extent of soil erosion associated with quadrat sampling zones.	196
Table 5.11	Comparisons of environmental attributes among sampling zones.	220
Table 5.12	Comparisons of environmental attributes among vegetation types.	223
Table 5.13	Comparisons of environmental attributes between seasons.	231
Table 6.1	Monthly camping permit data for both tracks for the sampling period.	240
Table 6.2	Characteristics of respondents.	243
Table 6.3	Level of experience.	247
Table 6.4	Group size as reported by survey respondents from each track.	250

Table 6.5	Reasons for undertaking the walk.	252
Table 6.6	‘Other’ reasons for undertaking this walk.	254
Table 6.7	Activities that respondents wanted to do but could not do.	255
Table 6.8	Appraisal of the natural environment (condition, interest and appeal).	257
Table 6.9	Appraisal of the natural environment (biophysical impacts).	259
Table 6.10	Appraisal of the social environment.	260
Table 6.11	Built environment appraisal.	262
Table 6.12	Respondent support for the establishment of additional visitor facilities.	263
Table 6.13	Statistical comparisons of visitor facilities that respondents most frequently indicated that they would like either established or increased along each walking track.	264
Table 6.14	Perceptions of current track management.	265
Table 6.15	Perceptions of possible future track management interventions.	267
Table 6.16	Respondents’ overall experience on each walking track.	269
Table 6.17	Simultaneous multiple regression analyses used to identify predictors of visitor satisfaction (dependent variable) for each walking track.	272
Table 6.18	Fear-inducing scenarios reported by respondents from both walking tracks.	276
Table 6.19	Perceptions of physical difficulty.	277
Table 7.1	General long-distance walking track management priorities.	326

## LIST OF FIGURES

Figure 2.1	Management of visitors to protected areas: classification of approaches.	25
Figure 2.2	Human-environment transactional model.	34
Figure 2.3	Curvilinear relationship between level of use, impact and recovery rates of natural sites exposed to trampling.	53
Figure 2.4	Factors known to influence the quality of experience of long-distance walkers within biophysical and psychosocial settings.	76
Figure 2.5	Conceptual and theoretical orientation of the research.	104
Figure 2.6	Conceptual and theoretical orientation of the biophysical impact assessment	105
Figure 2.7	Conceptual and theoretical orientation of the psychosocial experience assessment	106
Figure 3.1	The Wet Tropics World Heritage Area depicting the location of study sites.	110
Figure 3.2	Location of the Mt Bartle Frere Track and associated camping grounds.	123
Figure 3.3	Location of the Thorsborne Trail and associated camping grounds.	130
Figure 4.1	Biophysical impact assessment sampling design.	143
Figure 5.1	Topography associated with sampling points on each walking track.	171
Figure 5.2	Topography within vegetation types associated with each walking track.	171
Figure 5.3	Classification of track topography associated with sampling zone quadrats.	173
Figure 5.4	Spatial variation in track width (mean $\pm$ 1 standard error) associated with topography.	174
Figure 5.5	Spatial variations in track width (mean $\pm$ 1 standard error) associated with vegetation type.	175
Figure 5.6	Spatial variations in exposed mineral soil (median and percentiles) associated with quadrat sampling zones.	176

Figure 5.7	Spatial variation in exposed mineral soil (median and percentiles) associated with vegetation types. Control zone data excluded.	177
Figure 5.8	Spatial variation in leaf litter (median and percentiles) associated with quadrat sampling zones.	178
Figure 5.9	Spatial variation in leaf litter (median and percentiles) associated with vegetation types. Control zone data excluded.	180
Figure 5.10	Spatial variation in tree roots (median and percentiles) associated with quadrat sampling zones.	181
Figure 5.11	Spatial variation in tree roots (median and percentiles) associated with vegetation types. Control zone data excluded.	182
Figure 5.12	Spatial variation in rocks (median and percentiles) associated with quadrat sampling zones.	183
Figure 5.13	Spatial variation in rocks (median and percentiles) associated with vegetation types. Control zone data excluded.	184
Figure 5.14	Spatial variation in woody debris (median and percentiles) associated with quadrat sampling zones.	185
Figure 5.15	Spatial variation in woody debris (median and percentiles) associated with vegetation types. Control zone data excluded.	186
Figure 5.16	Spatial variations in living vegetation (median and percentiles) associated with quadrat sampling zones.	187
Figure 5.17	Spatial variation in living vegetation (median and percentiles) associated with vegetation types. Control zone data excluded.	188
Figure 5.18	Spatial variations in organic litter depth (mean $\pm$ 1 standard error) associated with quadrat sampling zones.	189
Figure 5.19	Spatial variations in organic litter depth (mean $\pm$ 1 standard error) associated with vegetation types. Control zone data excluded.	190
Figure 5.20	Spatial variation in canopy cover (median and percentiles) associated with quadrat sampling zones.	191
Figure 5.21	Spatial variation in canopy cover (median and percentiles) associated with vegetation types. Control zone data excluded.	193
Figure 5.22	Spatial variation in seedling density (mean $\pm$ 1 standard error) associated with quadrat sampling zones.	194
Figure 5.23	Spatial variation in seedling density (mean $\pm$ 1 standard error) associated with vegetation types. Control zone data excluded.	195

Figure 5.24	Percentage of quadrats (tread and buffer zones only) located within different vegetation types that contained soil erosion of varying severity on each track.	197
Figure 5.25	Percentage of tread zone quadrats within different topographic types that contained soil erosion of varying severity.	198
Figure 5.26	Frequency of incidences of feral animal activity (cane toads and pig diggings) recorded along transects within different vegetation types.	200
Figure 5.27	Counts of incidences of human litter of different types recorded along transects.	201
Figure 5.28	Counts of incidences of vegetation damage recorded along transects.	203
Figure 5.29	Counts of incidences of vegetation damage recorded along transects within different vegetation types.	204
Figure 5.30	Counts of incidences of additional track problems recorded along transects at both locations.	205
Figure 5.31	Seasonal variation in track width (mean $\pm$ 1 standard error) recorded within tread zone quadrats.	206
Figure 5.32	Seasonal variation in exposed mineral soil (median and percentiles) recorded within tread and buffer zone quadrats.	207
Figure 5.33	Seasonal variation in leaf litter (median and percentiles) recorded within tread and buffer zone quadrats.	208
Figure 5.34	Seasonal variation in tree roots (median and percentiles) recorded within tread and buffer zone quadrats.	209
Figure 5.35	Seasonal variation in rocks (median and percentiles) recorded within tread and buffer zone quadrats.	210
Figure 5.36	Seasonal variation in woody debris (median and percentiles) recorded within tread and buffer zone quadrats.	211
Figure 5.37	Seasonal variation in living vegetation (median and percentiles) recorded within tread and buffer zone quadrats.	212
Figure 5.38	Seasonal variation in organic litter depth (mean $\pm$ 1 standard error) recorded within tread and buffer zone quadrats.	213
Figure 5.39	Seasonal variation in canopy cover (median and percentiles) recorded within tread and buffer zone quadrats.	214

Figure 5.40	Seasonal variation in seedling density (mean $\pm$ 1 standard error) recorded within tread and buffer zone quadrats.	215
Figure 5.41	Seasonal variation in the total numbers of incidences of social trails, human litter, and human body waste recorded along transects.	216
Figure 5.42	Seasonal variation in the total number of incidences of vegetation damage recorded along transects.	216
Figure 5.43	Seasonal variation in the total number of incidences of additional track problems recorded along transects.	217
Figure 6.1	Gender age distributions for each walking track.	245
Figure 6.2	Sources of information (multiple responses allowed) about each track.	249
Figure 6.3	Number of days to complete each walk.	251
Figure 6.4	Visitor facilities that respondents most frequently indicated that they would like either established or increased along each walking track.	263
Figure 7.1	Concept map for a generic outdoor recreation setting.	314
Figure 7.2	Concept map for an intensively managed high visitation day-use area.	315
Figure 7.3	Concept map for a long-distance walking track.	317
Figure 7.4	Influences upon outdoor recreation setting resistance and resilience.	323

## LIST OF PLATES

Plate 3.1	Mt Bartle Frere viewed from Lamins Hill, Gourka Road on the Atherton Tablelands.	122
Plate 3.2	Advisory sign at the commencement of the western route to the summit of Mt Bartle Frere via the Atherton Tablelands.	124
Plate 3.3	Weather conditions can restrict visibility and make track directional markers difficult to locate.	125
Plate 3.4	Granite boulder lookout located between the Northwest Peak and the Summit of Mt Bartle Frere.	125
Plate 3.5	Highland vegetation growing on exposed peaks often possesses a relatively even and stunted canopy.	126
Plate 3.6	Proud hikers celebrate reaching the Mt Bartle Frere summit.	129
Plate 3.7	Mt Bowen is the highest point on Hinchinbrook Island.	132
Plate 3.8	Mountain heath vegetation overlooking Sunken Reef Bay.	133
Plate 3.9	Track directional markers along the Thorsborne Trail are different colours depending upon the route taken.	136
Plate 4.1	Long-distance walking tracks required all field equipment be transported to sampling points via foot.	139
Plate 4.2	Trundle wheel used to measure track distances and to stratify the relative lengths of vegetation types.	145
Plate 4.3	Locating quadrats and linear transects adjacent to a sampling point marker on the Thorsborne Trail.	146
Plate 4.4	Measuring track width and organic leaf litter depth within a one metre square quadrat on Mt Bartle Frere Track.	148
Plate 4.5	Severe soil erosion associated with the Mt Bartle Frere Track.	151
Plate 4.6	Long-distance walkers were able to collect survey forms from QPWS self-registration camping stations located at each end of the Mt Bartle Frere Track.	164
Plate 4.7	Plastic survey rack containing numbered surveys and laminated information sheet providing information about this research.	164