



Australian Government
Department of the Environment and Water Resources



Marine and Tropical Sciences Research Facility

Sustainable Use Part B

Sustainable tourism

Integrating ecology, economics and
people

Understanding and enhancing social
resilience

Marine and Tropical Sciences
Research Facility



Project 4.9.2 Sustainable Nature-based Tourism: Planning & Management

Project Leader:
Professor Bruce Prideaux





Background

Objective A

- Requests from industry for a regular long term visitor monitoring system to indicate patterns of visitation, seasonality, segmentation and changes over time in the Wet Tropics World Heritage Area
- Previous research has highlighted deficiencies in information available and visitor monitoring systems

Objective B:

- Revisit previous baseline studies to identify changes over the last 5 years in community attitudes and values & what is happening at specific WTWHA sites
- There is no existing tour operator manual for WTWHA sites enabling tour guides to present consistent, quality information to visitors of the Wet Tropics



Background Research

CRCTREM Site-Based Research (2001 – 2002)

- Joan Bentrupperbaumer & team
- Most recent visitor studies, observations, site inventory, traffic counts
- 2780 visitor surveys at 10 major sites
- 4.65million visits – 75% to 15 specific locations
- Recommendations incl. monitoring of changes in visitor patterns

Economic Values of Tourism in WTWHA (2007) (CRCTREM & JCU Tourism)

- Update of the value of tourism in WTWHA & visitor profiles previously conducted by Driml in 1997
- Recommendations incl. accurate estimates of visitor numbers, expenditure, substitutability of GBR vs. WTWHA rainforest tourism resources

Wet Tropics Management Authority (WTMA) State of Wet Tropics Report (2006)

- Concern about impact of high concentrations of visitors at specific locations
- Key research areas – visitor numbers, profiles, visitor patterns, potential activities, economic contribution of tourism



Stakeholder Groups/End Users

- Wet Tropics Management Authority (WTMA)
- Environmental Protection Agency (EPA)
- Queensland Parks & Wildlife Service (QPWS)
- Tourism Tropical North Queensland (TTNQ)
- Far North Queensland Tour Operators Assoc. (FNQTOA)
- Alliance for Sustainable Tourism
- Rainforest Aboriginal Council (ARC)
- Queensland Tourism Industry Council (QTIC)
- Regional tourism operators, attractions, visitor information centres & organisations



Project Tasks & Objectives

Objectives:

- A
 - Establish visitor monitoring program for the WTWHA
 - Identify key drivers of WTWHA visitor patterns incl. economic contribution
- B
 - Identify community attitudes, knowledge and perceptions of use and management of the Wet Tropics World Heritage Area
 - Understand community values of the WTWHA
 - Dry season & wet season survey to detail site visitation, changes and emerging trend
 - Develop a best practice strategy for creating a Wet Tropics wide integrated rainforest experience theme for visitors





Research Outcomes

- A Wet Tropics wide meta tourist data set
1. To facilitate long term analysis of tourist patterns including use and changes
 2. To collect a range of economic data – including contribution to the regional economy
 3. To give detailed knowledge of tourist segment characteristics including: use patterns over time, expenditure patterns, motivations, satisfaction etc to be developed.
 4. Identify the economic contribution of the WTWHA to regional economy
 5. Identify issues related to sustainability at the micro & macro levels
- B
1. Comparative data analysis from previous studies and revised visitor estimate
 2. Identify management tools & sustainable level of visitation framework to assist WTMA & EPA managers
 3. Develop a best practice strategy for creating a Wet Tropics wide integrated rainforest experience theme for visitors
 4. Will assist future benchmarks for a WTWHA tour operator accreditation system



Opportunities

Data will be used to :

- For development of management tools & frameworks
- For identification of environmental impact parameters (building on work undertaken by the Rainforest CRC)
- To ensure long-term sustainability of key Wet Tropics sites
- For measurement against state, national and international benchmarks
- To provide industry with information that will assist in increasing visitor satisfaction and operator profitability
- Enhance community ownership and participation





Outcomes & Communications

- Quarterly Visitor Barometers
- Yearly Overview of Visitor Monitoring Data
 - including evaluation of indicators used to identify key drivers & trends, seasonality issues, key visitor segments & economic contribution
- Technical Reports on establishing Wet Tropics visitor monitoring
- Quarterly Newsletters - to stakeholders & industry relating to research in progress
- Dissemination of information via seminars, workshops & conferences
- Representation at local & regional conferences & seminars
- Technical reports to Wet Tropics Management Authority (June 2007, Dec 2007, March 2008)
- Tour operator involvement required for success of manual



Outcomes A: Year 1

PRELIMINARY RESULTS FROM FIRST QUARTER'S VISITOR SURVEYS

- Rainforest Visitor Survey** 303 valid surveys
- **Most popular locations** = Kuranda, Mossman Gorge, Daintree, Cape Tribulation
 - **Spend ½ to 1 day** at these locations
 - **Important to visit rainforest during holiday**
 - **43.6% visited other rainforests in Australia, 46.4% in overseas locations**
 - **Short rainforest walks most popular potential activity**
- Airport Exit Survey** 367 valid surveys
- **71% visited rainforest**
 - **Most popular locations** = Kuranda, Mossman Gorge, Daintree, Cape Tribulation
 - **79% visited GBR**
 - **Most popular locations departed from** = Cairns, Port Douglas, Airlie Beach
 - **Budgeted Expenditure = Budget Spenders 45.5% Average Spenders 45.2%**





Future A

- **Continue gathering long-term monitoring data on visitor patterns & profiles in WTWHA**
 - 300+ surveys/month at rainforest locations
 - 200 surveys/month at airport
- **Report on key issues, trends and drivers of visitors in WTWHA**
- **Report on economic contribution of tourism in WTWHA**
- **Stakeholder workshops & seminars – disseminating information & explain visitor monitoring program**
- **Quarterly newsletters to industry & stakeholders**



Future B

- **Identify issues of concern to management agencies & commercial operators 1500 community surveys being posted end of April 2007 (8 towns)**
- **1500 community surveys door-knock beginning July 2007 (6 towns)**
- **Expected completion & reporting of Community Survey is March 2008**
- **WTWHA Site surveys in Wet & Dry seasons collection beginning April 2008**
- **Wet & Dry Season site visitation expected reporting completion August 2009**
- **Contact with permitted Tour Operators & QPWS rangers beginning May 2007**
- **Final Best Practice Tour Operator Manual expected July 2008**





Integrating ecology, economics and people in forests and landscapes

MTSRF Synthesis Conference

Dr Nick Emtage and A/Prof. John Herbohn
(NRSM, University of Queensland)



Project 4.9.4 Overview

- **Three main parts to project:**
 - Survey of rural landholders NRM practices and attitudes (2006 – 2008)
 - Update forest development financial modelling software to incorporate latest growth data and ecological parameters (2006 – 2007)
 - Integrated landscape planning and assessment of revegetation strategies (2007 – 2010)



Key People

- Research Team (UQ and SCU)
 - Leaders John Herbohn and Nick Emtage
 - Krishna Shestna (social studies), David Pullar (GIS), Jerry Vanclay (modelling) and Steve Harrison (economics)
 - FNQ NRM Inc.
- Stakeholder groups /end users
 - FNQ NRM Inc.
 - Industry associations
 - Local councils
 - DPI, DNRW, EPA, DLGPSR
 - OESR, PIFU
 - DEW, WTMA, DOTARS



Landholders survey overview

Issue

Need to understand and describe rural landholders NRM attitudes and practices

Research aims and objectives

- Provide a baseline assessment of landholders NRM practices, motivations, communication behaviour and attitudes
- Produce a comprehensive set of profiles (typology) of landholders in relation to NRM practices on private land in the Wet Tropics region





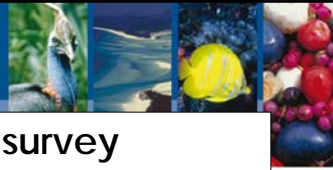
Survey methods overview

- Review existing data collection efforts and previous findings
- Establish partnerships with other interested stakeholders
- Review current landholder profiles
- Survey landholders
- Report on landholders perceptions about and adoption of recommended management
- Refine landholder profiles
- Work with local agencies to generate data about landholders adoption of industry specific NRM best management practices and profiles



Survey topics

- The topics for the survey include:
 - perceptions of NRM issues on their properties and within their catchment/sub-region/region and their importance;
 - current NRM practices;
 - current land management and enterprise characteristics;
 - perceptions of the currently recommended practices (CRPs) (awareness, trial, adoption, costs, benefits);
 - Levels of resources (human, social, financial, physical and natural); and
 - management objectives.



Guiding principles for survey

- Cover FNQ NRM Ltd reporting requirements
- Avoid duplication through cooperation to add value to other research within region, state and nation
- Increase capacity of local communities to undertake social research
- Improve understanding of the survey and NRM planning process within the community
- Establish partnerships that build opportunities to repeat the survey in the future



Applying landholder typologies to guide extension

- Researchers have reported that landholder typologies have practical utility for a number of reasons. The studies have identified consistent patterns in landholders the:
 - variations in land management objectives (i.e. mix of economic, personal and conservation objectives);
 - scale of operations and enterprise mix (or sources of livelihood support) of various types of landholders;
 - financial and social capital available to various landholder types; and
 - way that various types of landholders gather and process information about land management practices.

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Landholder profile examples						
Table 1: Landholder types in FNO						
Group	Land size (ha)	Cropping (% of holding)	Native forest (% of holding)	Time managed land (yrs)	Income (% from farming)	Family work (hrs per week)
High intensity	58	47	9	17	45	60
Retired professionals and hobbyists	54	16	31	14	36	45
Progressive second generation	81	37	11	18	54	64
Traditional	100	45	25	27	71	99
Experienced/comfortable	74	38	27	22	62	55

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Table 2: Landholder types and associated learning styles						
Landholder type	Learning style					
Innovative and progressive farmers	'Extensive networking' (use at least four sources of information to support changes in practices) or 'outward looking'					
Middle of the road	Spread between learning styles but mostly 'outward looking' (use a number of information sources plus active observation of the practice before undertaking change)					
Resource poor	People-focussed (use one or two people and one other source of information to support change, learn through one-on-one interactions or farmer groups) or locally focussed					
Traditional	Locally focussed (use only locally based sources of information to support change, including local media and observation of local practices)					
Lifestyle	Varied practices and learning styles. The learning style characteristics of this group were not described by Kilpatrick <i>et al.</i> (1999)					



Within industry profiles

- Consult with industries to assess best method to cluster farms within industries
 - Could be based on a combination of the scale of operations, production techniques used and the management objectives
 - Identify pathways for improved productivity and improved NRM
 - What stages or 'contexts' do farm enterprises pass through to achieve their managers objectives and the communities NRM goals?



Within industry profiles

- Employ the concept of 'farming contexts'
 - Context = the resources, practices and technologies currently used by a farmer in production and the key attributes of the farmer such as his or her business and farming aspirations and objectives'
- Aim to combine production and NRM extension
 - Understand where and why currently recommended practices offer advantages within various farming contexts and pathways to improved production and NRM



Survey Timeframes

- Finalise research framework and partnerships
 - Until June 2007
- Carry-out survey
 - July to September 2007
- Develop analyses and reporting
 - November 2007 to May 2008
- Work with public agencies and industry groups to implement findings
 - June 2008 onward



Key Outcomes

- Baseline data about landholders adoption of CRPs in the region in relation to NRM activities
- Improved understanding of landholders motivations, attitudes, capacities and learning and communication behaviour
- Better understanding of landholders actual costs and benefits from NRM activities
- Better understanding of landholders understanding of their 'duty of care' and thresholds of concern for the environment



Developing DS Tools for Assessing Investment in Farm Forestry and Restoration

- Based on Australian Farm Forestry Financial Model developed as part of CRC Rainforest activities

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Australian Farm Forestry Financial Model

Modules of the AFFFM accessible from the farm structure screen

Module A: Landscape image of a forest.

Module B: Farm structure

Activities included:

- Agriculture
- Native forests
- Plantations
- Activity givers

Farm activity areas:

- Grazing area (ha): 1400
- Cropping area (ha): 420
- Plantation area (ha): 25
- Native forest area (ha): 1.25
- Unused area (ha): 225
- Total farm area (ha): 2245

Financial analysis:

	Without activity	With activity
Net present value	\$156,861	\$181,364
Land expectation value	\$168,267	\$171,525
Net present value per ha	\$156.83	\$181.13
Equivalent annual value	\$5	\$5
Internal rate of return	6.13%	

Other options:

- Time period of analysis: 70 years
- Discount rate: 6%
- Calculate present value
- Graph business cash position
- Graph position

Module C: Agiculture

Product	Yield	Price	Value
Wheat	1000	1.5	1500
Young wheat	1000	1.5	1500
Wool	1000	1.5	1500
Young wool	1000	1.5	1500

Module D: Native forests

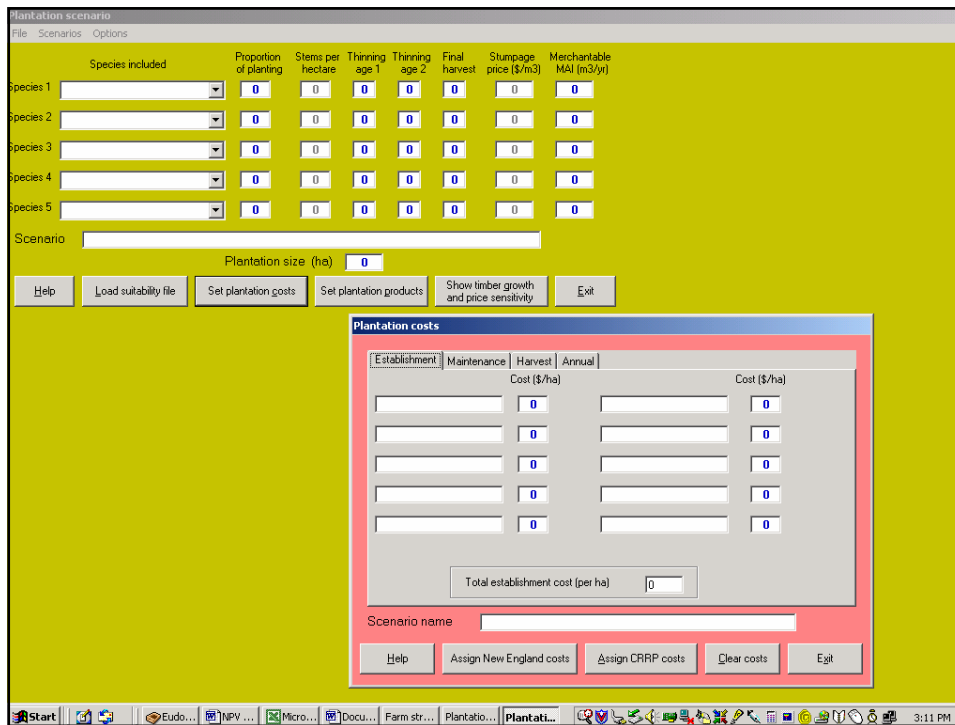
Native forest area name	Forest area (ha)	Road plantations (ha)	Cutting cycle (years)	Strip size (ha)	Timber price (\$/cubic m)	Harvest volume (cubic m/ha)	Harvest revenues (per ha)
Native forest	50	0.75	25	0.25	18.75	11,750	117,250
Young forest	75	1.125	30	0.3	17.5	13,125	131,250
...

Module E: Native forests

Scenario	Plantations	Native forest	Plantation	Native forest	Plantation	Native forest	Plantation	Native forest
Scenario 1	100	0	100	0	100	0	100	0
Scenario 2	20	80	20	80	20	80	20	80
Scenario 3	30	70	30	70	30	70	30	70
Scenario 4	40	60	40	60	40	60	40	60
Scenario 5	50	50	50	50	50	50	50	50

Module F: Native forests

Native forest area	Annual income	Annual expenses	Net annual income
Native forest area (A)	100	100	0
Native forest area (B)	100	100	0
Native forest area (C)	100	100	0
Native forest area (D)	100	100	0



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Developing DS Tools for Assessing Investment in Farm Forestry and Restoration

- Will develop a module specific to restoration plantings to supplement existing farm forestry and native forest modules in AFFFM
- Develop new growth module for native species in north Queensland
 - Jerry Vanclay will coordinate the calibration of existing species growth models he has developed for rainforests to plantations based on large numbers of field measurements
 - New growth equations will be built into a new growth module in AFFFM

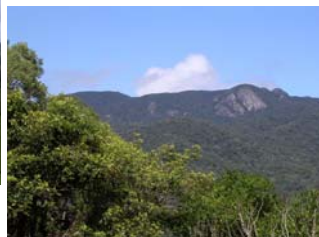


Developing DS Tools for Assessing Investment in Farm Forestry and Restoration

- From 2008 will investigate the financial performance, risk profiles and broader social, environmental and economic impacts of revegetation plantings
 - Develop an integrated bio-economic model based on the AFFFM
 - Use this model to investigate the trade-offs between management for ecological purposes and economics and to identify cost-effective public and private sector investment strategies to restore/maintain ecological goods and services at a regional scale
 - As part of this research, we will identify appropriate support measures for different types of planting systems and management strategies – also links with landholder typology work



Thank you





Understanding and Enhancing Social Resilience to Water Quality Change in the Great Barrier Reef region

Project Leaders:

Prof. Helen Ross, UQ
Dr Margaret Gooch, JCU
Dr Tim Lynam, CSIRO



Introduction to project

Development of indicators of social resilience to contribute to decision making in relation to water quality change and management interventions to achieve water quality targets.

- Requires us to develop a theoretically defensible and context-appropriate understanding of social resilience
- We work collaboratively with our 'end users' at three scales
- Using multiple methods especially case studies.





Need for this research

- Growing environmental manager awareness that human dimensions are important to them:
 - Sustainable development (consider peoples' and environments' needs together)
 - Ability to influence on-ground change
 - Cooperation through engagement and communication (political fallout without this)
- Lack of system understanding with respect to social-ecological synergies in maintaining resilience
- Need for relevant, targeted information on social dimensions to assist decision-makers.

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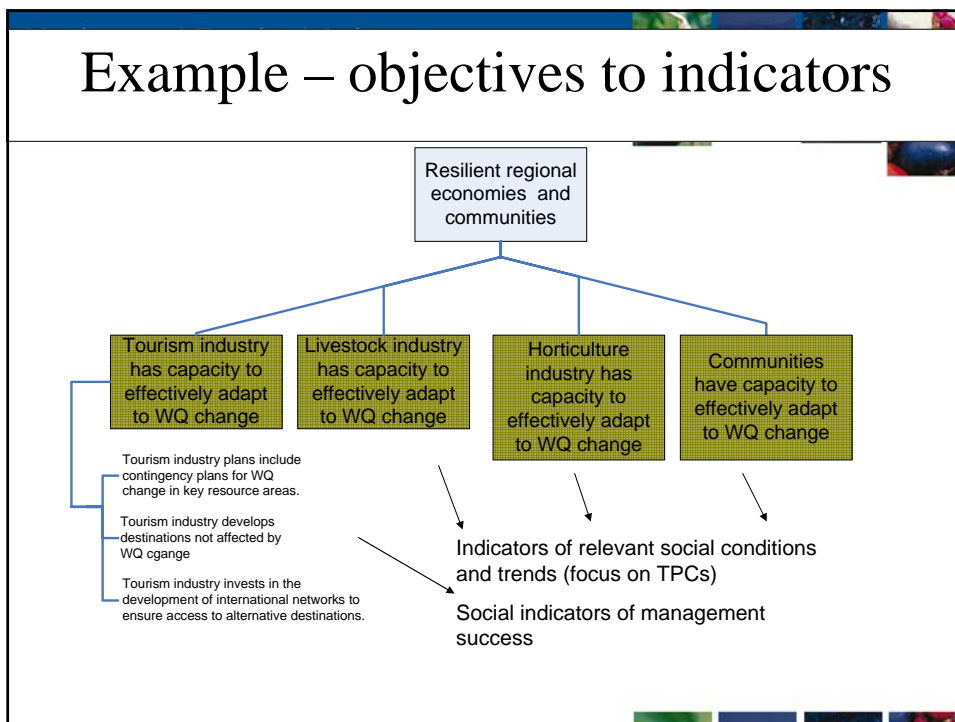
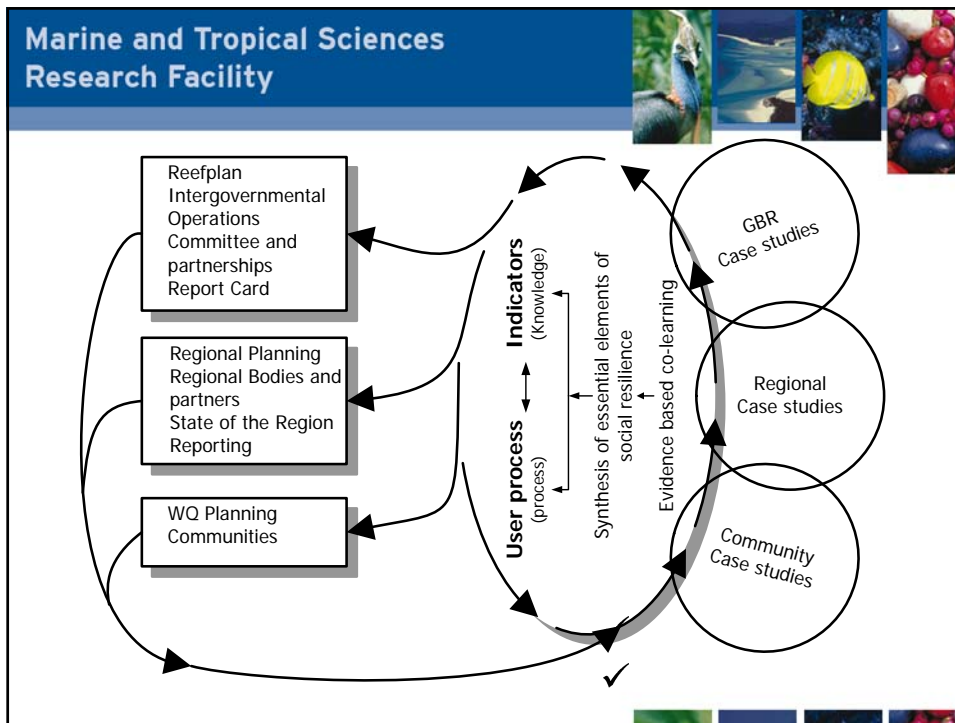
Project Objectives

To contribute a set of indicators of social resilience to water quality change for use by scientists, communities, natural resource management agencies (government, NRM agencies and industry agencies) and a more generally applicable approach to developing these indicators.

At (and linking) three scales

1. whole GBR
2. Large catchment (regional body administration);
3. community

Approach and methods for multi-scale indicator development and conceptual model for social resilience thresholds (Year 2 onwards)





- **Key research users and relationships**

- GBR: FNQNRM, WTMA, GBRMPA, MTSRF (also peak industry bodies, Reef Partnership)
- Regional body/Catchment scale: as above and other Regional NRM bodies, ARC, Regional Coordination Group, catchment bodies, LG – ROC
- Community: Catchment coordinating committees; Councils; Water Quality Improvement Plan groups; Industry bodies – eg cane growers, tourism organisations; Local Chambers of Commerce; Local Politicians, school communities, grassroots NRM groups – eg landcare, bushcare



Future Years

Follow through collaborative process of generating indicators with end users, in cycles

Conduct case studies (various scales and foci) as information input, and for direct value to participants.

Contribute indicators of social resilience to GBR report card, State of Region Report card, projects

Refine conceptual model of social resilience

Report on approach and methods for multi-scale indicator development

