ECONOMIC EVALUATION OF TOURISM FOR NATURAL AREAS
development of a toolkit approach

David Wood, John Glasson, Jack Carlsen and Diane Hopkins
Technical Reports
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Economic Evaluation of Tourism for Natural Areas: development of a toolkit approach

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PREFACE

This study seeks to provide simple methods to evaluate the contribution of natural area tourism to local/regional economies. It draws on work undertaken in 2003 by Carlsen and Wood (see Carlsen & Wood 2004) and longitudinal research undertaken by Wood in the Gascoyne region of Western Australia since 1997 (Wood & Dowling 2002; Wood 2003). The former study assessed the economic contribution of tourism to two Western Australian regions (the Gascoyne Coast and Southern Forests), whilst the latter provides stratified samples of tourism data each April in most years since 1997 and data from the other significant tourism seasons collected over two years between 2002 and 2004.

Whilst other studies in Australia and abroad have evaluated the economic contribution of natural area tourism to economies, data collection remains an issue for many natural area managers with limited personnel and financial resources. Similarly, the presentation of information suitable for funding decision makers is a vexed issue that sometimes inhibits the successful use of tourism data and interpretive reports. The Department of Conservation and Land Management (CALM) in Western Australia has successfully used the work of Carlsen and Wood to augment management resources in the state’s parks. This success is attributable to CALM’s mounting of a plausible business case and to its confidence in tourism data collected independently by Wood, as well as Wood and Carlsen over a prolonged period. This prolonged data collection informs the current project providing insights into suitable data collection methods, sample size, key data required to assess economic contributions and methods for analysis and presentation of data.

The project was conducted by the Curtin Sustainable Tourism Centre (CSTC), in collaboration with researchers from the University of Queensland, under the auspices of the Sustainable Tourism Cooperative Research Centre (STCRC).

ACKNOWLEDGEMENTS

The Sustainable Tourism Cooperative Research Centre, an Australian Government initiative, funded this research.

The authors acknowledge the cooperation of tourists in the Exmouth region for completing surveys and Jennifer Lalor and staff at Information Management Services, Educational Technologies, Curtin University of Technology for their support in processing and analysing data. The authors also acknowledge the ongoing support of the Department of Conservation and Land Management which funded earlier and related research and whose staff have assisted in data collection.
SUMMARY

Tourism to protected areas (national parks, marine parks, forests and beaches) contributes significantly to local, regional, state and national economies. However, the resources to manage natural areas are small and sometimes dwindling whilst, at the same time, the extent of natural areas is increasing to satisfy community expectations for environmental conservation. It has been recognised for some time that managers can exploit the demonstrable economic benefits of tourism to natural areas to argue for better management resources but all too often, arguments founder on the inability to collect primary data, consensus over data collection methods and reporting criteria. This project seeks to develop simple data collection and presentation methods drawing on experience in Australia and abroad leading to the preparation and validation of a survey instrument that minimises the quantity of data required to produce reliable results. We argue that direct tourist expenditure provides the most suitable method for assessing the contribution of tourism to local/regional economies given the resource constraints of natural area managers and nearby communities.

Objectives of the Study

The key aim is to develop a ‘toolkit approach’ to assess the economic value of tourism to parks and natural areas. The toolkit is based on a critical appraisal of selected evaluation methods and techniques that have been implemented in Australia and abroad. The toolkit enables natural area managers, such as National and Marine Park administrators and rangers to easily gauge the economic contribution of tourism to localities and regions by measuring the level of direct expenditure brought by tourism to natural areas. Such data can be used to present cases to better resource the management of the natural environmental areas, that attract so many domestic and international tourists, to help make tourism a more sustainable industry. This project builds on work undertaken in 2003 by Carlsen and Wood and of Wood between 1997 and 2003 (Wood & Dowling 2002; Carlsen & Wood 2004) to measure the direct economic value of tourism to two nature-based destinations in Western Australia, the Southern Forests Region and the Gascoyne Coast Region.

Methodology

The project builds on other Australian and international studies to establish methods of assessing the economic contribution of tourism to natural areas, to clarify key explanatory variables of tourism expenditure and to develop and proof a simple survey instrument. More specifically, the project includes:

- desktop research to identify methods to assess the economic evaluation of tourism to natural areas;
- a critical analysis of survey data collected at two sites in Western Australia, between 1997 and 2003, to assess key variables in direct tourist expenditure;
- the development, assessments and modification of a survey instrument that addresses the key variables of tourism expenditure.

Data was collected in Exmouth between 1997 and 2004 as part of an ongoing longitudinal study. The primary data collection period is April each year but data sets are also available from February, July and September since 2002.

Key Findings

The study finds that the most appropriate measure of assessing the contribution of tourism to a local/regional economy is tourism direct expenditure given the resource constraints of survey users. The key explanatory variables of tourism direct expenditure are:

- origin
- accommodation type
- activities
Albeit some of these variables are destination specific as demonstrated in the table below. Consequently, a very useful survey can be restricted to questions related to expenditure and these five key variables (see table below). Additional questions enable the attribution of tourism expenditure to the study area and a measure of the substitution effect. Attribution and substitution were key elements in presenting tourism direct expenditure data to the Western Australian Treasury (see Carlsen & Wood 2004) as they provide concrete evidence of the significance of the protected area in attracting tourists and retaining their expenditure in the state economy.

<table>
<thead>
<tr>
<th>Variable</th>
<th>CORRELATION WITH VISITOR EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Southern Forests Region</td>
</tr>
<tr>
<td>Visitor place of origin</td>
<td>-</td>
</tr>
<tr>
<td>Visitor accommodation</td>
<td>significant</td>
</tr>
<tr>
<td>Visitor activities</td>
<td>-</td>
</tr>
<tr>
<td>Visitor household income</td>
<td>significant</td>
</tr>
<tr>
<td>Visitor age</td>
<td>-</td>
</tr>
</tbody>
</table>

The study also finds that:

- The survey instrument developed by the researchers can be used to successfully collect direct expenditure data;
- Sample sizes can be small provided they are representative of the key variables. Consequently, it is recommended that surveys be conducted in all accommodation types and or places visited by all tourists such as beaches and shopping centres. This conclusion is reached after analysing a longitudinal survey conducted in all tourism seasons and over a nine-year period;
- The best results are achieved when surveys are completed face to face followed by mail back surveys conducted by researchers/natural area managers. Surveys that rely on accommodation providers achieve inconsistent results;
- Data can be analysed simply and without the use of computers at a local level for reporting purposes but that centralised storage systems provide the capacity to analyse and compare data during different seasons and over time clearly demonstrating trends and changes in tourist activity;
- In Western Australia, CALM successfully used tourism direct expenditure data to present a business case, acceptable to the Western Australian Treasury, for increased management resources.

Future Actions

The toolkit approach consists of a series of steps, with a ‘core’ survey which can be extended with ‘supplementary’ questions to collect additional information relevant to management and promotion of natural areas, instructions for survey delivery and options for analysis and reporting tourism direct expenditure data. In consultation with the Sustainable Tourism CRC, commercialisation of the toolkit will be explored. This product would be promoted for use by natural area managers, tourism agencies, tourism associations, local government and other interested parties.
Chapter 1

INTRODUCTION

Research Aims

This study seeks to provide simple methods to evaluate the economic contributions of natural areas to local/regional economies. In particular, it seeks to develop a ‘toolkit approach’ to assess such economic contributions. The toolkit is based on a critical appraisal of selected evaluation methods and techniques that have been implemented in Australia and abroad. It will enable natural area managers, such as national and marine park administrators and rangers, to readily assess the direct value of tourism to natural areas.

This report should be read in conjunction with the report by Carlsen and Wood (2004). Carlsen and Wood (2004) provide a rationale for the direct expenditure method of valuing natural areas and a methodology that enables the calculation of direct tourism expenditure based on:

- average expenditure per person/day;
- duration of stay;
- total visitors numbers based on the triangulation of data sources;
- total visitor expenditure (average expenditure per person/day x average length of stay x total visitor numbers);
- attribution factor (expenditure that can be directly attributed to the natural area);
- substitution factor (expenditure that would occur outside the state if the area did not exist).

Carlsen and Wood (2004) also provide information about the case study regions where survey data was collected and a summary of the raw data.

Steering Committee

The project steering committee for this study included representatives from:

- Curtin University of Technology;
- The University of Queensland;
- Oxford Brookes University;
- The Department of Conservation and Land Management (CALM);
- The South Australian Department for Environment and Heritage;
- Tourism Western Australia;
- Murdoch University; and
- Parks Victoria.

Outline of the Report

Chapter 1 discusses the research aims, approaches to measuring direct value, with a particular focus on the ‘direct-expenditure’ method, and the methodology for this research. Chapter 2 establishes the direct value of tourism in the two natural area case studies of the Gascoyne Coast Region and the Southern Forests Region, and, through statistical analysis, identifies key variables determining the nature of visitor expenditure. Chapter 3 provides an introduction to the dimensions of the toolkit, and a step-by-step walk through its use. Chapter 4 provides a set of conclusions and some recommendations on future actions.
Importance of Economic Evaluation of Protected Area Tourism

Protected areas and parks have many environmental and social values and are of value to the economy through tourism and recreation. Nature-based tourism is a growing industry that is dependent on natural attributes (Eagles 2002), particularly those in national parks and protected areas (Laarman & Gregersen 1996; Eagles 2002). Parks often supply the most important part of the nature-tourism experience but usually capture very little of the economic benefits (Wells 1997 cited in Eagles 2002). The majority of protected areas charge low entry and user fees that only cover a proportion of the costs of management (Lockwood & Tracy 1995; Wells 1997 cited in Eagles 2002). Consequently, governments lack hard fiscal evidence to justify the allocation of public funds to park management (Laarman & Gregersen 1996) despite its importance to tourism.

Since political processes largely focus on the economy and monetary returns (IUCN 1998), establishing the economic value of protected natural areas can help in the development of sound arguments for the allocation of government resources for natural area management. The economic value of natural resources for tourism use which can be realised by park management tend to be ignored (Lee 1997) because these public areas are usually not valued directly through any price or market mechanism (Lockwood & Tracy 1995). Attaching monetary values to natural areas is a way to account for their use and impacts in the market (Garrod & Fyall 1998) and provides policymakers with a basis for funding allocation (Lee 1997). Economic valuations can contribute to decisions between different public policy alternatives by giving guidance on the economic costs and benefits of allocation options (Lockwood & Tracy 1995). Whilst the economic value of protected areas has been recognised internationally (IUCN 1998), the economic benefits of tourism to protected areas cannot be easily identified (CEPM 2004).

Economic Evaluation Methods

A number of studies have been undertaken in Australia and overseas to place an economic value on national parks and protected areas (CEPM 2004). A variety of evaluation techniques have been developed to assess the economic impact of tourism and recreation to natural areas including environmental impact assessments (EIA), cost-benefit analysis (CBA), surrogate market techniques (property values, travel cost method and contingent valuation) and environmental auditing (Carlsen 1997). Input-output analysis has commonly been used at a state or national level to measure the economic value of tourism (Fletcher 1989) but it is cost prohibitive when applied at a local or regional level and complexities of the analysis are not widely understood by those not involved in economics (CEPM 2004). Also, as other STCRC research has argued, input-output analysis is subject to criticism due to its unrealistic assumptions (Dwyer, Forsyth, Spurr & Ho 2005).

Whilst economic values extend beyond market values of goods and services and include the non-market values that society places on natural areas (Carlsen 1997), the majority of studies focus on the economic impacts which are more readily measurable. These impacts include direct impacts (through visitor expenditure and employment in the tourism sector), indirect impacts (through economic benefits to other sectors) and induced impacts (through purchases spent by tourist generated wages (Henry & Deane 1997). Total economic impact is determined by applying a multiplier, which rates the indirect and induced impacts of tourism, on the direct economic impact (Swart, Var & Gearing 1978).

When measuring the economic impact of a specific tourism resource, such as a protected area, rather than a tourism destination, it is necessary to determine the amount of expenditure that is associated solely with that resource (Johnson & Moore 1993). The proportion of trip expenditure devoted solely to the resource (attribution factor) and the visitor’s alternative travel plans if that resource was not available (substitution behaviour) are important to measure so that economic values are not overstated (Johnson & Moore 1993; Carlsen & Wood 2004).
Measuring Economic Value – the Direct Expenditure Method

Stynes (1999) proposes levels for establishing tourism economic impacts from judgement, an estimate, based on existing data sources to systems that rely on primary data collected through local surveys (Table 1). He also argues that the most significant information required is a reliable estimate of visitor numbers, which is difficult to establish in regional tourism sites in Australia due to Tourism Research Australia (formerly the Bureau of Tourism Research) sample sizes (Carlsen & Wood 2004). Stynes (1999) argues that expenditure is more predictable and can be estimated from other studies. However, he acknowledges that the greater the amount of primary data the greater is the reliability of the economic assessment (CEPM 2004). Surveys, survey methodologies and a classification of key explanatory variables are therefore critical to the quality of the assessment.

It should also be noted that the direct expenditure method provides only a conservative minimum estimate of the total economic contribution of natural areas as it excludes secondary expenditure such as local employment and does not include wider values (such as use values, like ecosystem services and future values, or non-use values, like biodiversity and ritual values). In short, there is likely to be other levels of benefit of natural areas additional to the direct expenditure noted here. Secondary expenditure could be calculated from the direct expenditure data through a form of multiplier analysis.

<table>
<thead>
<tr>
<th>Level</th>
<th>Tourism Activity</th>
<th>Expenditure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Judgement</td>
<td>Expert judgement to estimate tourism activity.</td>
<td>Expert judgement or an ‘engineering approach’.</td>
</tr>
<tr>
<td>2</td>
<td>Existing tourism counts for the area or total estimates from a similar area or facility.</td>
<td>Use or adjust expenditure averages from studies of a similar area/market.</td>
</tr>
<tr>
<td>3</td>
<td>Estimate tourism activity by segment or revise estimates by segment from another area.</td>
<td>Adjust expenditure that is disaggregated within particular categories &amp; segments. Use sector-specific multipliers from published sources.</td>
</tr>
<tr>
<td>4 – Primary data</td>
<td>Visitor survey to estimate number of tourists by segment or a demand model.</td>
<td>Survey random sample of visitors to estimate average expenditure by segment and category.</td>
</tr>
</tbody>
</table>

Source: Stynes 1999

Methodology for this Research

The research included several key elements:

- Desktop research to identify methods to assess the economic evaluation of tourism to natural areas.
- A critical statistical analysis of survey data collected at two sites in Western Australia (Gascoyne Coast Region and Southern Forests Region) between 1997 and 2003, to assess key explanatory variables of direct tourist expenditure. This is discussed in the following Chapter 2.
- The development, assessment and modification of a survey instrument, that addresses the key variables of tourism expenditure, and which can be extended from the supply of ‘core information’ to also include a range of ‘supplementary information’. This is discussed in Chapter 3.
Chapter 2

ESTABLISHING THE ECONOMIC VALUE OF TOURISM IN TWO NATURAL AREAS

Background: Survey Data

In 2003, the Department of Conservation and Land Management (CALM) and Tourism Western Australia (then the WA Tourism Commission) supported a tactical project to undertake an ‘Economic evaluation of tourism for natural areas’ at two sites in Western Australia; Ningaloo Reef/Cape Range National Park and the Southern Forests (see Carlsen & Wood 2004). The evaluation was established through the collection and analysis of local tourism expenditure data, collected in visitor surveys, and visitor numbers, established through the use of a four year time series of Bureau of Tourism Research (BTR) data. Due to concerns about the accuracy of BTR data, visitor number estimates were triangulated against other sources such as CALM estimates based on car counters at the entrance of the Cape Range National Park and local government visitor number estimates. The latter sources provided larger estimates of visitor numbers than the BTR data so BTR figures were used to avoid overestimating total visitor numbers. Primary data collection was conducted in April 2003 (which coincides with the arrival of whale sharks in Exmouth) and July 2003, a peak period of domestic visitation providing a cross section of visitor segments (see Carlsen & Wood 2004). This data was verified by comparison with longitudinal data collected by Wood since 1997 (see Wood & Dowling 2002; Wood 2003).

The surveys collected the following data enabling the development of a comprehensive profile of visitors to both regions:

- duration of stay
- origin
- mode of transport
- group size
- accommodation type
- reasons for visit/activities – attribution question
- information sources
- substitution question – choice compared with another place
- activities
- accommodation type
- intention to visit again
- expenditure in the region and in Western Australia
- household income
- age
- gender
- visitor satisfaction

An attribution question was included in the survey to identify the proportion of total visitor expenditure that could be attributed to the natural area and a substitution question was included to identify the proportion of total visitor expenditure that is new and/or retained within Western Australia because of the natural area. Substitution is significant to the Western Australian Treasury which adopts the view that new and/or retained visitor expenditure is only significant to the state’s economy if it would otherwise be spent outside the state.
Background: Visitor Expenditure Data

The 2003 study produced direct visitor expenditure figures for the Gascoyne Region of $81.30/day and for the Southern Forests of $89.70/day. The composition of visitor expenditure is detailed in Table 2. The variation in daily accommodation expenditure element should be seen in the context of the distribution of use of types of accommodation (Table 3). There is also considerable variation in activity and equipment expenditure. Overall daily expenditure was as high as $140 in Exmouth where the whale shark swimming industry is centred and as low as $46 in the National Park CALM managed camping grounds indicating the potential significance of accommodation type and activities and equipment as indicators of tourism direct expenditure.

<table>
<thead>
<tr>
<th>Expenditure (pp/per day)</th>
<th>Southern Forests Region</th>
<th>Gascoyne Coast Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel</td>
<td>$10.20</td>
<td>$14.60</td>
</tr>
<tr>
<td>Accommodation</td>
<td>$35.80</td>
<td>$18.10</td>
</tr>
<tr>
<td>Food and drinks</td>
<td>$22.00</td>
<td>$18.50</td>
</tr>
<tr>
<td>Activities</td>
<td>$6.10</td>
<td>$15.40</td>
</tr>
<tr>
<td>Equipment</td>
<td>$7.70</td>
<td>$10.00</td>
</tr>
<tr>
<td>Other</td>
<td>$7.90</td>
<td>$4.70</td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>$89.70</strong></td>
<td><strong>$81.30</strong></td>
</tr>
</tbody>
</table>

Source: Carlsen and Wood (2004)

<table>
<thead>
<tr>
<th>Accommodation Type</th>
<th>Southern Forests Region</th>
<th>Gascoyne Coast Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campground</td>
<td>8.6%</td>
<td>73.5%</td>
</tr>
<tr>
<td>Caravan park</td>
<td>14.8%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Backpackers</td>
<td>10.0%</td>
<td>28.2%</td>
</tr>
<tr>
<td>Cabin/chalet</td>
<td>25.7%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Hotel/motel</td>
<td>29.0%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Rental house</td>
<td>7.2%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Other</td>
<td>4.9%</td>
<td>3.1%</td>
</tr>
</tbody>
</table>

Source: Carlsen and Wood (2004)

* Visitors can use more than one accommodation type, hence totals sum to more than 100%. The table indicates the percentage of visitors that stayed in particular accommodation types.

Statistical Analysis

The extensive databases for the two case study regions provide an opportunity to explore possible data relationships, in particular the strength of associations between key variables, using correlation analysis. The underlying hypothesis is that there are variations in the dependent variable (per average daily visitor expenditure) which is explained to varying degrees by variations in the independent variables (e.g. origins of visitors, age, accommodation type etc).

The data sets used for the analysis were for Gascoyne (Exmouth) (2002 and 2003 data combined, to give as large a data set as possible), and the South West (2003 data, as the only set available at the time of analysis). Data preparation included screening for outliers, organising into agreed categories,
and then carrying out the analysis using the Statistical Package for the Social Sciences (SPSS) program. Relevant categories included, for example, origins of visitors (overseas, interstate and intrastate), and accommodation type (campsite, caravan park, backpackers, hotel/motel).

Some Findings on Key Explanatory Variables

After adjusting for outliers and incomplete returns, the sample for the analysis was 330 for the Gascoyne and 310 for the Southern Forests. Analysis revealed that in the Gascoyne, there are significant correlations (at the 0.01 level) between daily expenditure and place of origin (Spearman -0.36) and between expenditure and age of the respondent (Spearman -0.242, please note that the negative sign reflects the way variables are coded). Daily expenditure in Exmouth is highest amongst international and intrastate visitors and decreases with the age of respondents. The inverse relationship between age and expenditure in Exmouth may reflect the large number of elderly campers who visit the area for extended periods from April to September (see Table 3). The other key explanatory variables in the Exmouth sample are visitor activity (Spearman -0.317) which can be attributed to the high cost of swimming with whale sharks ($300.00 per head) and scuba diving which usually costs around $100.00 per dive, and accommodation type (Spearman 0.394) as there are large numbers of campers in the cohort. In summary average daily visitor expenditure:

- decreases with the increasing age of visitors (<30, 30-45, 46-60, >60);
- decreases with ascending place of origin category (1=international, 2=interstate, 3=intrastate);
- decreases with ascending (as coded here) activity category (1=paid with whale sharks, 2=paid without whale sharks, 3=unpaid); and
- increases with ascending accommodation category 1=campsite, 2=caravan park, 3=backpackers, 4=hotel/motel/chalet).

In Western Australia’s Southern Forests, the key variables are between daily visitor expenditure and yearly household income (Spearman 0.127, at 0.05 level) and accommodation type (Spearman, 0.334, at 0.01 level) whereas place of origin is less significant than in Exmouth. In effect, expenditure increases proportionately with household income and is highest amongst international and interstate visitors. As is the case for Exmouth visitors, accommodation type is a key variable in visitor expenditure, increasing with the cost of accommodation. In summary, daily visitor expenditure:

- increases with ascending accommodation category (1=campsite, 2=caravan park, 3=backpackers, 4=hotel/motel/chalet);
- increases slightly with increasing household income ($10000 – 19999, 20000 – 29999, 30000 – 39999, 40000 – 49999, 50000 – 99999, 100000 and over).

<table>
<thead>
<tr>
<th>Variable</th>
<th>SF Region</th>
<th>GC Region</th>
<th>SF Region</th>
<th>GC Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitor place of origin</td>
<td>0.100</td>
<td>0.360</td>
<td>at 0.01 level</td>
<td>at 0.01 level</td>
</tr>
<tr>
<td>Visitor accommodation</td>
<td><strong>0.334</strong></td>
<td><strong>0.394</strong></td>
<td>at 0.01 level</td>
<td>at 0.01 level</td>
</tr>
<tr>
<td>Visitor activities</td>
<td>0.092</td>
<td><strong>-0.317</strong></td>
<td>at 0.01 level</td>
<td>at 0.01 level</td>
</tr>
<tr>
<td>Visitor household income</td>
<td><strong>0.127</strong></td>
<td>0.045</td>
<td>at 0.05 level</td>
<td>at 0.01 level</td>
</tr>
<tr>
<td>Visitor age</td>
<td>0.076</td>
<td><strong>-0.242</strong></td>
<td>at 0.01 level</td>
<td>at 0.01 level</td>
</tr>
</tbody>
</table>

Source: survey data/analysis
Commentary

The findings showed that there are a limited number of key explanatory variables that influence daily visitor expenditure. The one common and highly significant variable is the type of visitor accommodation. Other key variables for the Gascoyne/Exmouth area were visitor activity and visitor place of origin – which in this case may be related. It was found that the presence of a high cost activity, in this case the unique activity of swimming with whale sharks, can cause dramatic variations in daily visitor expenditure. Consequently, activities can be a key variable where these are costly and popular.

Whilst sample sizes for this project were relatively large, data was also compared with that collected by Wood (see Wood 2003) since 1997 with samples varying from around 100 to 400 surveys. This comparison produced remarkably consistent results across varying sample sizes with the exception of one survey that was dramatically skewed by a predominance of campers in the survey, suggesting that samples should be moderated by knowledge of accommodation types and occupancy rates at the time a survey is conducted.
### Chapter 3

**THE TOOLKIT**

**Introduction**

<table>
<thead>
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<th>Overview of Toolkit</th>
</tr>
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<tr>
<td><strong>Research Administration</strong></td>
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<tr>
<td>- establish research project steering committee</td>
</tr>
<tr>
<td>- identify case study areas</td>
</tr>
<tr>
<td>- set project milestones</td>
</tr>
<tr>
<td><strong>Establish Context</strong></td>
</tr>
<tr>
<td>- evaluation of what?</td>
</tr>
<tr>
<td>- for whom?</td>
</tr>
<tr>
<td>- for what region?</td>
</tr>
<tr>
<td>- scope of the evaluation – geographic, demographic, temporal</td>
</tr>
<tr>
<td><strong>Decide on Level of Assessment</strong></td>
</tr>
<tr>
<td>- expert judgement – judgement sample</td>
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<tr>
<td>- survey snapshot – cross-sectional survey</td>
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<td>- primary data – longitudinal survey</td>
</tr>
<tr>
<td><strong>Design Survey Instrument: Basic Information</strong></td>
</tr>
<tr>
<td>- visitor place of origin</td>
</tr>
<tr>
<td>- visitor accommodation type</td>
</tr>
<tr>
<td>- visitor activities</td>
</tr>
<tr>
<td>- visitor household income</td>
</tr>
<tr>
<td>- visitor age</td>
</tr>
<tr>
<td>- visitor expenditure</td>
</tr>
<tr>
<td>- attribution and substitution (the attribution of expenditure to the natural area and the significance of the area in attracting or retaining expenditure within the state)</td>
</tr>
<tr>
<td><strong>Design Survey Instrument: Additional Information</strong></td>
</tr>
<tr>
<td>- visitor travel behaviour</td>
</tr>
<tr>
<td>- visitor motivation</td>
</tr>
<tr>
<td>- visitor information sources</td>
</tr>
<tr>
<td>- visitor satisfaction</td>
</tr>
<tr>
<td>- elements for wider scope of evaluation (other questions that may assist management of tourists or the evaluation of tourism in the area)</td>
</tr>
<tr>
<td><strong>Manage Survey Activity</strong></td>
</tr>
<tr>
<td>- validating survey instrument</td>
</tr>
<tr>
<td>- survey administration</td>
</tr>
<tr>
<td>- data processing, treatment and analysis</td>
</tr>
<tr>
<td>- comparison of findings with other studies</td>
</tr>
<tr>
<td><strong>Dissemination</strong></td>
</tr>
<tr>
<td>- gain acceptance of results by steering committee and stakeholders</td>
</tr>
<tr>
<td>- reporting – written and oral feedback and presentation</td>
</tr>
</tbody>
</table>
Research Administration

Establish Research Project Steering Committee
It is important to engage with all of the potential users of the research at the inception stage to ensure that the approach and methods are transparent and widely understood. The project steering committee could include funding agencies (or clients), research team members and government parks and tourism agencies with an interest in the findings.

Identify Case Study Areas
The case study areas should be agreed by the project steering committee and may be selected by the funding agency (or client), the research team members or both. Ideally case studies should have natural areas as a core tourism attractor and tourism should be an important economic activity for the towns within the study area.

Set Project Milestones
Clear and agreed project milestones will ensure that the project remains ‘on track’ and provide a means of monitoring the progress of the project over time.

Establish Context for Evaluation Study
This important initial stage of any evaluation study involves a number of key contextual questions: impact of what, for whom, for what region and with what scope?

Evaluation of What?
- Focus is on the economic impact, on a town or region, of tourism to natural and protected areas (e.g. national parks, marine parks, heritage places). The area will be nominated by the agency/group undertaking the survey and will be named on the survey cover sheet.
- Includes current ongoing tourism activity, over a particular time period (e.g. a year, a quarter). Whilst the agency/group administering the survey may choose to gain a snapshot view of a tourism destination, others may choose to administer a survey throughout a year to learn about different market segments and may even choose to establish a longitudinal survey to illicit information about trends over time.
- The main categories of expenditure include: accommodation, activities, travel in area, food/drink/restaurants, equipment/souvenirs etc. The agency/group administering the survey should add any additional accommodation types and specify the primary activities available in the locality/region in Question 4. An understanding of activities has been found to be beneficial to natural area management decision-making.
- Expenditure (in the basic studies) is the direct expenditure on goods and services by tourists in the locality/region but can also detail expenditure in the state.

For Whom?
- While the aim is to provide details of per person daily expenditure and total expenditure for natural area resource managers, the information is also likely to be useful to other stakeholders including local government, local tourism agencies, regional development commissions, and state government agencies.

For What Region?
- The study region should be clearly defined by the agency/group administering the survey (preferably with a reader friendly map) and should include one or more town(s) or accommodation facilities which are sites of tourism expenditure.
- It should be a district tourism destination area.
Economic Evaluation of Tourism for Natural Areas: development of a toolkit approach

• It should reflect the economic reality of the natural area, and its linked hinterland (part of which may be outside the national park etc.) Including a local town(s).

Scope of the Evaluation
• The scope (the number and type of visitors surveyed, the timing and duration of survey administration, the geographic boundaries of the study area and the level of detail sought) is influenced by the resources available for the study.
• By the level of detail of information available prior to administering a survey.
• By the robustness of existing available data (e.g. existing trend data on visitor numbers, on visitor expenditure; close comparative studies from elsewhere etc.

Decide on Level of Assessment
As discussed earlier, extensive surveys in the Gascoyne and Southern Forests achieved remarkably similar levels of daily expenditure, albeit these varied at localities within the Gascoyne study area due to high cost activities in Exmouth and low cost accommodation in the national park and on stations along the coast. These findings suggest that it may be possible to estimate total direct expenditure provided there are reasonably accurate total visitor figures available and that daily expenditure can be estimated based on other available data (see Stynes 1999). As with the scope of the evaluation, the level of assessment is influenced by the resources available. Therefore, it is suggested that there are three levels of assessment of the value of natural area tourism available to local natural area managers and other interested individuals and groups. The three levels of assessment are as follows:
• Level 1 – expert judgement using secondary data or judgemental samples
• Level 2 – survey snapshot – using a cross-sectional sample (one time period only)
• Level 3 – a longitudinal and seasonal survey – multiple time periods (high, shoulder and low season).

Table 5: Information requirements for each assessment level

<table>
<thead>
<tr>
<th>Information required</th>
<th>Assessment levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Annual visitor nights</td>
<td>*</td>
</tr>
<tr>
<td>Primary visitor survey data</td>
<td>*</td>
</tr>
<tr>
<td>Longitudinal/seasonal data</td>
<td></td>
</tr>
</tbody>
</table>

Level 1 – expert judgement
Level 1 assessment requires an informed understanding of the nature of tourist activity in the region of interest. Estimates of visitor expenditure are made on the basis of ‘rules of thumb’ comparisons from elsewhere (e.g. expenditure in forest national park areas is normally $x per capita per day). This average expenditure estimate is applied to available data on visitation numbers (or estimates from similar area).

The existence of an expensive tourist activity in a region significantly increases the daily visitor expenditure. In the Gascoyne Coast Region, for example, swimming with the whale sharks costs approximately $300 per person. An analysis of expenditure data in this region shows that the average daily visitor expenditure is $x higher for those who undertake this activity.

Level 2 – survey snapshot
Level 2 involves the administration of a snapshot survey that identifies daily visitor expenditure which can be annualised when multiplied by visitor nights. Estimates may be segmented by, for example,
visitor type (e.g. international visitors on average expenditure is $y per capita per day), and possibly for activity types, and/or different seasons.

**Level 3 – primary data**

Level 3 assessment involves the use of primary data based on visitor surveys. A random sample of visitors to the region of interest is carried out in order to estimate the total visitor expenditure (direct economic impact of tourism), and average expenditure by visitor type, visitor activity etc. The primary focus of the survey should be on the key explanatory variables of tourism expenditure of:

- visitor place of origin;
- visitor accommodation type;
- visitor activities;
- visitor household income; and
- visitor age.

Supplementary information, such as visitor motivations and visitor travel behaviour, may be desired by those administering the survey and can significantly contribute to management of natural areas. This information is easily gained with the addition of questions to the basic visitor survey. See Appendix A for the base survey and Appendix B for optional additional questions. The following describes the survey instrument developed and tested during the valuing parks toolkit project.

**Design Survey Instrument: Core Information**

The project demonstrated that there are five (5) key explanatory variables of visitor expenditure, albeit these are not necessarily statistically significant at all locations. The variables are place of origin; accommodation type; activities; household income; and age. Variables that did not have a natural order of sequence (e.g. place of origin, accommodation and activities) were coded in a sequential manner in order to enable statistical testing.

**Visitor Place of Origin**

Place of origin was grouped as follows, in accordance with the survey design:

1. International
2. Interstate (another state within Australia)
3. Intrastate (within Western Australia)

**Visitor Accommodation**

Although accommodation data was collected on the basis of seven accommodation types (campsite, caravan park, backpackers, cabin/chalet, hotel/motel, house, other) in the visitor surveys, these were reduced to four groupings for ease of analysis. Visitor accommodation is grouped into the following four accommodation types in a sequential order based on normal expense:

1. campsite
2. caravan park
3. backpackers
4. hotel/motel (includes units, chalets, etc)

**Visitor Activities**

Information on specific visitor activities was collected in the visitor surveys. Visitor activities were subsequently grouped into two categories for ease of analysis: paid and unpaid. Due to the significant expense of a particular tourist activity (swimming with whale sharks) in the Gascoyne Coast Region, another category was added for analysis in this region (see Table 6).
Table 6: Visitor Activities – paid and unpaid

<table>
<thead>
<tr>
<th>Southern Forests Region</th>
<th>Gascoyne Coast Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 paid</td>
<td>1 paid with whale sharks</td>
</tr>
<tr>
<td>2 unpaid</td>
<td>2 paid without whale sharks</td>
</tr>
</tbody>
</table>

**paid activities**
- Gloucester tree/tree top walk
- visiting national parks
- touring wineries
- dining out

**unpaid activities**
- swimming
- visiting friends

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3  paid</td>
<td>3 unpaid</td>
</tr>
</tbody>
</table>

**paid activities**
- swimming with whale sharks
- diving from a boat
- fishing from a boat
- coral viewing from a boat
- safari tour

**unpaid activities**
- diving from the shore
- snorkelling from the shore
- fishing from the shore
- swimming
- lying on the beach
- sightseeing

Visitor Household Income

Household income rather than individual income was selected as it was considered to better reflect the financial situation of the visitors. Previous visitor survey research has indicated a much higher response rate to the question of household income where visitors were asked to nominate their income category rather than their specific income. Household income was grouped in accordance with the survey design, into the following categories:

1. $10,000 - $19,999
2. $20,000 - $29,999
3. $30,000 - $39,999
4. $40,000 - $49,999
5. $50,000 - $99,999
6. $100,000 and over

Visitor Age

Visitor age was analysed using age of the respondent to the survey, in the following groupings based on the survey design:

1. < 30yrs
2. 30 - 45yrs
3. 46 - 60yrs
4. > 60yrs

Attribution and Substitution

At an inception meeting of the original project team in 2003, a representative of the Western Australian Treasury indicated that Treasury was only interested in the inclusion of direct expenditure if it was attracted to or retained in Western Australia, leading to the development for a substitution question. Similarly, Treasury required a method of attributing the proportion of visitor expenditure to natural areas (marine parks, national parks or forests). Earlier trials suggested that a direct attribution question such as: ‘did you visit the area because of the natural/marine park?’ drew negative responses from local tourists aggrieved by CALM management of natural areas. Therefore, it was found that the
most reliable method of attributing visits to the natural area was through the activities question on a survey.

**Design Survey Instrument: Additional Information**

Additional information elements depend largely on the requirements of the client or steering committee. Thus the ‘attribution’ and ‘substitution’ elements included in the Western Australia surveys as ‘basis’ information may be ‘additional’ for other areas/clients. Other possible optional questions related to visitor travel behaviour, visitor motivations, visitor information sources, and visitor satisfaction, are set out in the survey template in Appendix B. All these questions have been successfully used in surveys in natural areas in Western Australia, and can provide information which may be particularly valuable to a client/sponsor at a particular point in time (e.g. use of visitor information sources, subsequent to a major advertising campaign).

The focus of this study is on the direct expenditure method, for particular points in time, but our research has identified a set of other additional elements which might be considered in subsequent research projects. Of particular interest are:

- The inclusion of a time factor in the analysis. It can be argued that natural areas become more valuable over time (with scarcity value, pressure from competing uses). As such, the application of a negative annual discount rate to the sum total of direct expenditure could provide a measure of value over a longer period. It of course raises issues of appropriate discount rate (e.g. 0, -2%, -4% etc) and constancy of visitor numbers. However it could be used to give an interesting composite figure on return per hectare, per square kilometre, etc. of tourism compared with other land uses/activities over time.
- The inclusion of direct expenditure on provision of facilities and access to facilities.
- The use of some form of multiplier analysis to pick up the wider indirect (linked suppliers), and induced (local tourism employees/employers secondary expenditure). This could range from generic multipliers (e.g. direct expenditure multiplied by 1.4 etc) to more sophisticated, but much more complex, input-output analysis.
- A consideration of the wider values of natural areas, including indirect use value (e.g. Carbon sequestration, ecosystem services, future values), and non-use values (existence values – biodiversity, ritual values, landscape etc.).

The mention of such additional elements emphasises the point that the direct expenditure method, as highlighted in this report, provides only a conservative minimum estimate of the economic value of natural areas. There is likely to be another level of economic benefit of natural areas, additional to the direct expenditure noted here.

**Manage Survey Activity**

*Validating the Survey Instrument*

A survey instrument was developed using the key variables listed above and was trialled in Exmouth and the Southern Forests. The use of the word ‘region’ in the expenditure question was queried by a number of respondents and was subsequently amended in a later trial to the name of the place where surveys were administered, albeit the survey cover included a map titled by the name of the region. It should be noted that the final survey instrument was the product of years of survey development and refinement since 1997. The final survey core basic questions are at Appendix A of this report. Optional additional questions are at Appendix B of this report.

*Survey Administration*

Sample survey protocols must be observed to gain a random sample survey (e.g. coverage of full range of accommodation types; allowance for seasonal variations). Surveys were administered as self completed surveys mailed back to the research team achieving response rates between 30% and 50%. The surveys were completed accurately and in detail and with no apparent confusion.
effectiveness of the refined instrument is reflected in the fact that almost 100% of surveys returned in the most recent surveys were suitable for analysis.

Other survey administration techniques used for administration of the longitudinal survey, since 1997, include face to face survey administration by students and staff, which is very effective, and administration by accommodation providers, which proved much less effective.

**Data Processing, Treatment and Analysis**

The researchers enter all data into SPSS after careful assessment of data collected enabling ongoing data comparison and cross tabulation. However, the survey instrument is simple and data can be analysed manually if necessary.

Data cleaning will be necessary to remove ‘outliers’ or data values that vary greatly from the mean. As a decision rule, data values that are more than +/- 2 standard deviations from the mean should be trimmed from the data set.

Missing values in the expenditure data sets should be treated as zero expenditure. Most importantly, data should be reported in a way that is easy to understand, particularly through making use of tables and graphs.

**Comparison of Findings**

In order to validate findings it is useful to compare the data on length of stay and expenditure with existing studies, to ensure that there is some uniformity in the estimates. It is also useful to compare attribution and substitution factors for various natural areas to reinforce the value of these areas for tourism.

**Dissemination**

**Acceptance of Results by Steering Committee/Client**

A draft of the findings should be circulated to steering committee members and the acceptance of the findings secured. Any points of clarification or justification or the project methods and findings should be included in the final version of the report prior to publication and written and oral dissemination.

**Reporting**

Written reports should be in a user-friendly form, with a 1 to 2 page Executive Summary. Consider other forms of media, such as radio and television, to disseminate findings to a wider audience. Feature articles in newspapers and magazines will often cite economic data on the value of tourism to natural areas also.
Chapter 4

CONCLUSION AND FUTURE ACTIONS

Conclusions

The key aim of the project was to develop a ‘toolkit approach’ to assess the economic value of tourism to natural areas. The project methodology has built on previous studies to establish methods of assessing the economic value of tourism to natural areas. The project has also used the databases established for two natural area regions in Western Australia, Gascoyne (Exmouth) and the Southern Forests, to identify the key explanatory variables behind visitor expenditure. The key variables are visitor accommodation, origin, activities, household income and age. Visitor accommodation shows a particularly strong correlation with expenditure, for both regions. Significant links are also provided to place of visitor origin, and to nature of activities, for the Gascoyne case study.

The clarification of explanatory variables allows the ‘toolkit approach’ to be focused. The study provides an overview of key steps in the approach: establishing the context; choosing the level of assessment; designing the survey instrument for basic information; designing the survey instrument for additional information; and managing the administration of the survey. The study shows that the survey instruments developed by the researchers can be used successfully to collect direct expenditure data. Sample sizes can be small provided that they are representative of the key variables. The best results are achieved when surveys are completed face-to-face, followed by mail back surveys conducted by researchers/natural area managers. Data can be analysed simply, and the results can be very effective in presenting a business case for government/agency support for natural areas.

Future Actions

In consultation with the Sustainable Tourism CRC, commercialisation of the toolkit will be explored. This product would be promoted for use by natural area managers, tourism agencies, tourism associations, local government and other interested parties.

Whilst the direct expenditure method provides a very useful measure of economic value of natural areas, it should be noted that it is also a very conservative, minimum, valuation. It is therefore proposed that further innovative research is undertaken on estimating the wider economic benefits of tourism in natural areas, including for example an estimate of benefit over time, with the application of appropriate discount rates, and comparison on a standard basis (e.g. benefit per square kilometre) in comparison with other land uses/activities. It is also intended to evaluate the social and environmental values of tourism in natural areas through further STCRC funded research.
APPENDIX A – CORE QUESTIONS

1. How long are you staying in [region]? ........ days

2. What is your normal place of residence?

Country (if other than Australia)  Australian State

3. Where are you staying during your visit to [region] and for how long?

<table>
<thead>
<tr>
<th>Accommodation type</th>
<th>Locality</th>
<th>No. of nights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Campsite</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caravan park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backpackers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hotel/motel (including lodge, unit, chalet, etc)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Which of the following activities have you done during your visit or plan to do?

[activity 1]  [activity 6]  [activity 2]  [activity 7]  [activity 3]  [activity 8]  [activity 4]  [other………]

5. If the natural environments of [region] did not exist, would you have chosen to:
   a. Travel to the [region] anyway  
   b. Stay at home
   c. Travel elsewhere in [state]
   d. Travel to another Australian state
   e. Travel to another country
6. Would you mind telling me how much you are spending/intend spending on your holiday? (If you have not completed your trip please provide estimates). Please indicate/estimate figures for the total trip.

<table>
<thead>
<tr>
<th>Expenditure item ($AUS)</th>
<th>In [region name]</th>
<th>In [state] travelling to [region]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel (air fares, bus fares, car hire, fuel, etc.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accommodation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food and drinks: local hotels/restaurants + local stores/supermarkets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Activities (national park fees, sightseeing trips)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment (purchased for your trip, e.g. film, fishing gear)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (clothing, merchandise, souvenirs, etc.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. How many people do these figures cover? Number ………

8. Would you mind telling me your normal approximate yearly household income in $AUS (including pension and unemployment benefits)?

- $10,000 - $19,999 □₁
- $20,000 - $29,999 □₂
- $30,000 - $39,999 □₃
- $40,000 - $49,999 □₄
- $50,000 - $99,000 □₅
- $100,000+ □₆

9. Would you mind telling your age? ……… years
APPENDIX B – OPTIONAL QUESTIONS

VISITOR TRAVEL BEHAVIOUR

1a. How did you get to [region]?

- [ ] Motor vehicle
- [ ] Hire
- [ ] Plane*
- [ ] Bus
- [ ] Package Tour
- [ ] Scheduled bus*
- [ ] Other (specify) …………………

1b. * If you arrived by plane or bus how did you travel around [region]?

- [ ] Hire motor vehicle
- [ ] Local bus

2. Who are you visiting with?

- [ ] Alone
- [ ] With partner
- [ ] With family or friends
- [ ] Number in group ………
- [ ] With a club/tour group

3) a) Will you visit [region] again?  
   - [ ] Yes   □ 3 - go to Q b
   - [ ] No   □ 3

   b) If so, when?   (month / year)   □ 4 / □ 5 or some time in the future (tick if appropriate)   □ 1

VISITOR MOTIVATIONS

1. What were the reasons why you chose to visit [region]?

   - [reason 1] □ 1   □ 5
   - [reason 2] □ 2   □ 6
   - [reason 3] □ 3   □ 7
   - [reason 4] □ 4   □ 8
   - [reason 5] □ 5
   - [reason 6] □ 6
   - [reason 7] □ 7
   - other ………………… □ 8

VISITOR INFORMATION SOURCES

1. How did you originally find out about [region]?

   - [state] Tourism Commission □ 1
   - Advertisement (radio, TV, etc) □ 5
   - Local tourism office □ 2
   - Guide book (e.g. Lonely Planet) □ 6
   - Internet site □ 3
   - Friends / word of mouth □ 7
   - Documentary □ 4
   - Other ………………… □ 8
VISITOR SATISFACTION

1. On the scale below could you please indicate your level of **satisfaction** with your holiday in [region]?

<table>
<thead>
<tr>
<th>Very dissatisfied</th>
<th>Neutral</th>
<th>Very satisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. If you have visited other **natural areas** in Australia or overseas in the last five years, can you please indicate **where** and whether you rate your visit to [region] **worse/same/better**.

   Where? .................................. Rating of [region]..................
   Where? .................................. Rating of [region]..................
   Where? .................................. Rating of [region]..................
REFERENCES


IUCN (1998) *Economic Values of Protected Areas: Guidelines for Protected Area Managers*, Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN in collaboration with the Economics Service Unit of IUCN, The World Conservation Union (IUCN) & Cardiff University, Gland, Switzerland & Cambridge, UK.


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**Professor Jack Carlsen** is currently the Chair in Tourism and Hospitality Studies, Curtin University of Technology. He facilitates the tourism research program at Curtin, which includes tourism development, planning and management. Appointed to the Chair in 2002, he has since been successful in establishing the Curtin Sustainable Tourism Centre, which plays a lead role in sustainable tourism teaching, research, consulting, and policy formulation in Western Australia. Nationally, he is the Sustainable Enterprises Research Program Leader and is a member of the Program Development Committee within the Sustainable Tourism Cooperative Research Centre. Email: jack.carlsen@cbs.curtin.edu.au

**Diane Hopkins** is a PhD candidate in the Department of Urban and Regional Planning at Curtin University. She has worked as a local government town planner and is currently in the final year of her PhD studies which explores deliberative planning processes. Diane has worked as a researcher for an ongoing study into the economic contribution of tourism to the Gascoyne region over the last two years and has co-written several papers and reports on this topic.
The Sustainable Tourism Cooperative Research Centre (STCRC) is established under the Australian Government’s Cooperative Research Centres Program. STCRC is the world’s leading scientific institution delivering research to support the sustainability of travel and tourism - one of the world’s largest and fastest growing industries.

Research Programs

Tourism is a dynamic industry comprising many sectors from accommodation to hospitality, transportation to retail and many more. STCRC’s research program addresses the challenges faced by small and large operators, tourism destinations and natural resource managers.

Areas of Research Expertise: Research teams in five discipline areas - modelling, environmental science, engineering & architecture, information & communication technology and tourism management, focus on three research programs:

- **Sustainable Resources**: Natural and cultural heritage sites serve as a foundation for tourism in Australia. These sites exist in rural and remote Australia and are environmentally sensitive requiring specialist infrastructure, technologies and management.

- **Sustainable Enterprises**: Enterprises that adhere to best practices, innovate, and harness the latest technologies will be more likely to prosper.

- **Sustainable Destinations**: Infrastructural, economic, social and environmental aspects of tourism development are examined simultaneously.

Education

- **Postgraduate Students**: STCRC's Education Program recruits high quality postgraduate students and provides scholarships, capacity building, research training and professional development opportunities.

  **THE-ICE**: Promotes excellence in Australian Tourism and Hospitality Education and facilitates its export to international markets.

Extension & Commercialisation

STCRC uses its research network, spin-off companies and partnerships to extend knowledge and deliver innovation to the tourism industry. STCRC endeavours to secure investment in the development of its research into new services, technologies and commercial operations.

Australia’s CRC Program

The Cooperative Research Centres (CRC) Program brings together researchers and research users. The program maximises the benefits of research through an enhanced process of utilisation, commercialisation and technology transfer. It also has a strong education component producing graduates with skills relevant to industry needs.
