

Wood, D., & Glasson, J. (2005). Giving the environment a voice: the transformational potential of valuing tourism in sensitive natural environments: the case of the Ningaloo coastal region, Western Australia. *Planning Practice & Research*, 20(4), pp. 391-407

GIVING THE ENVIRONMENT A VOICE – THE TRANSFORMATIONAL POTENTIAL OF VALUING TOURISM IN SENSITIVE NATURAL ENVIRONMENTS: The Case of the Ningaloo Coastal Region, Western Australia

David Wood¹ and John Glasson²

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- 1. Associate Professor, and Co-Director of Sustainable Tourism Co-operative Research Centre (STCRC), Curtin University, Western Australia**
 - 2. Professor and Co-Director, Oxford Institute for Sustainable Development (OISD) Oxford Brookes University, and Visiting Professor, Curtin University, Western Australia**

Introduction

Our supply of pristine natural areas is under constant threat from a wide range of demands. Such natural areas can be seen as areas of contested land use between developers and conservationists, with government and its agencies seeking to assess and manage this interaction as best they can. Natural areas contain vital resources - of biodiversity, geology, and cultural heritage; but they are also attractive sites for development projects, for exploiting natural resources, either through production (e.g. minerals, logging) or consumption (e.g. tourism) activities. Natural areas are often icons of sustainable development – having major benefit for current and future generations – but managing the contested environment is often difficult, and there are many examples of damaging trade-offs. However, occasionally there can be a symbiosis between the natural areas and development and the area of tourism potentially offers a development activity which can be in harmony with the environment.

The focus of this article is on the use of tourism, in a positive way, to demonstrate the value of the sustainable development of natural areas. The concept of sustainable tourism has gained an increasing profile within the tourism sector since the 1992 World Summit on Sustainable Development in Rio de Janeiro (Beyer et al, 2003). The World Tourism Organisation (WTO) defines sustainable tourism as development that 'meets the needs of the present tourists and host regions while protecting and enhancing the opportunity for the future --- in such a way that economic, social and aesthetic needs can be fulfilled, while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems' (cited in Beyer et al, 2003).

Natural areas, which are often designated as protected areas (National Parks, Marine Parks etc.), have many environmental and social values and add value to the economy through tourism and recreation. Nature-based tourism is a growing industry that is dependent on natural attributes (Eagles, 2002), particularly in protected areas (Laarman and Gregerson, 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). Furthermore, the majority of protected areas charge no or, at best, low entry and user fees and these cover only a proportion of the costs of management (Lockwood and Tracy, 1995; Van Sickle and Eagles, 1998; Wells, cited in Eagles, 2002). Consequently, governments can lack fiscal rationales for the allocation of public funds for the management of natural areas (Laarman and Gregersen, 1996).

The importance of valuing the environment has been succinctly expressed by several authors, for example:

In a world where money talks, the environment needs value to give it a voice.
(Cairncross, 1991).

If, on the other hand, conservation and sustainable use of resources can be shown to be of economic value, then the dialogue of developer and conservationist may be viewed differently, not as one of necessary opposites, but of potential complement.
(Pearce, 1993).

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This article explores this important issue in the context of tourism, and also in the context of a stakeholder environment which includes government and its agencies seeking arguments to support natural area management. Demonstrating the economic value of protected areas can help in the development of arguments for the allocation of government resources. However the economic value of conserving natural resources for tourism use is often ignored because it is usually not captured directly through the price mechanism (Lockwood and Tracey, 1995; Lee, 1997). Attaching monetary value to natural capital is a way to account for its use and impacts in the market (Garrod and Fyall, 1998). Such economic valuations can contribute to decision making between different policy options, and between different stakeholders.

Western Australia (WA) has an array of very important natural areas, many of which are significant internationally. This work draws on research to measure the value of such areas through tourism, using a direct spend approach. The following section outlines the WA context, the key role of natural area based tourism for regional development, and the associated stakeholder environment. There is then an outline of the research methodology, and in particular of the direct spend survey approach. This is followed by a discussion of the findings on the direct value of tourism, and their implications for stakeholders and their decision making. Examples are provided of how such valuing of the environment through tourism can change the institutional environment and the relative roles and influence of various stakeholders – highlighting as such the transformational potential of appropriately valuing tourism in sensitive environments. The article concludes with a brief outline of ways to develop further what is still a minimal evaluation of the environment through tourism measures.

Research case study context

The research draws primarily on a case study of tourism in the Ningaloo Coastal Area of Western Australia. Over the last 20-30 years, tourism has flourished in Australia. It contributed \$A32 billion to GDP (2002-03) and was estimated to have employed more than 540,000 people. It also contributed approximately 11% of the nation's total export earnings. Western Australia has participated in this tourism boom, offering a range of attractions – from the metropolitan experience of Perth, and the heritage of Fremantle, to much more nature-based tourism opportunities especially focusing on the superb coastal environment. The Ningaloo Coast includes some of Australia's finest natural environments, stretching between Carnarvon in the south, and Exmouth in the north, and focusing around the Ningaloo Reef (Figure 1). To the south of Ningaloo lies the Shark Bay World Heritage site. A Tourism White Paper (2003) and a subsequent 'Tourism Australia' initiative, commencing July 2004, have a strong regional tourism development component, including the encouragement of tourism in protected areas by breaking down barriers to partnership working between the key stakeholders (Park agencies, industry, government et al).

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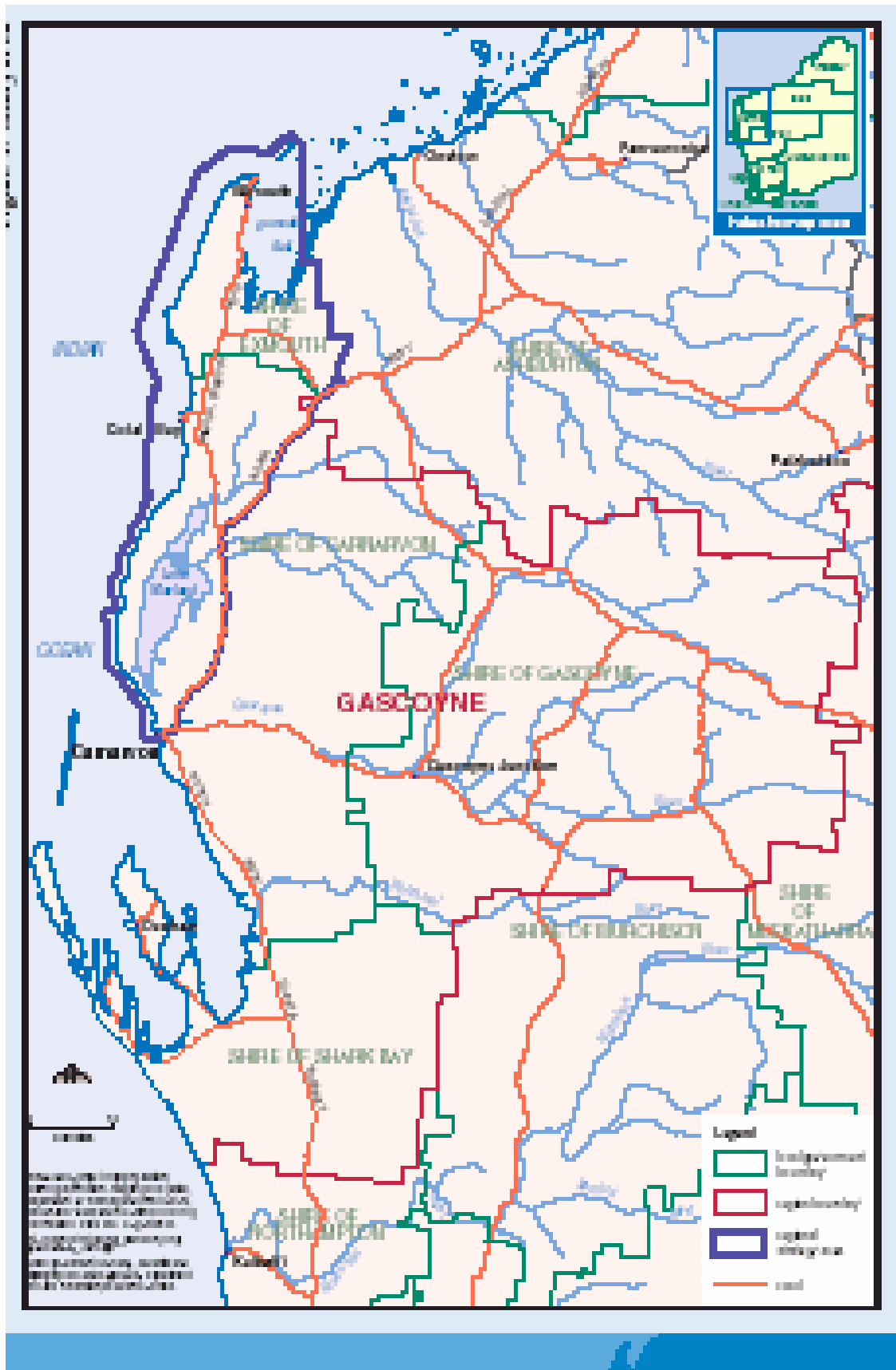


Figure 1: Ningaloo Coastal Region, Gascoyne, Western Australia

Source: WAPC (2004) (Apologies for map quality, to be corrected for publication)

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Ningaloo is a 200km long fringing coral reef that is accessible from the shore. The area is internationally well known, particularly among scuba divers and naturalists, as the only readily accessible place where whale sharks congregate in significant numbers (Davis et al, 1997). The reef supports a very diverse range of marine species, including over 200 species of coral, 600 species of mollusc and 500 species of fish. In addition to the whale sharks, the reef is also famous for aggregations of dugongs, sharks, whales and manta rays. The Ningaloo Marine Park, presently covering an area of 430,000ha, was designated in 1987. In addition the adjoining Cape Range, near Exmouth, was designated as the Cape Range National Park, encompassing 50,581ha. Cape Range is the only elevated limestone range on the north-western coast of Western Australia, and is home to a rich environment displaying significant scientific, cultural, biological, scenic and recreational attributes.

Despite its isolated location, over 1200km from Perth, the region has experienced significant tourism growth over the past decade, with many international and Australian visitors using the very convenient airport at Learmonth, in addition to the numbers travelling there by road. The airport is a significant link with the recent past, being associated with the US submarine monitoring station established at Exmouth in the 1960s. The US military subsequently pulled out of the area in the early 1990s resulting in a loss of 25% of the town's population (although a residual Australian military presence has continued), leaving the economy vulnerable and very much dependent on the fishing industry and declining pastoral activities. In this context, the growth in tourism has provided a welcome boost and diversification of the regional economy.

The majority of existing tourist developments in the region are located at Coral Bay, to the south and at Exmouth, to the north. The Department for Conservation and Land Management (CALM) manages several formal campsites in the Cape Range National Park, and informal camping also occurs on sheep stations adjacent to Ningaloo Reef (Western Australian Planning Commission, 2003). Both Coral Bay and Exmouth are constrained in their capacity for tourism growth by infrastructure deficiencies, including sewerage capacity at Coral Bay and water supply at Exmouth. There is also serious government and community concern about the environmental impacts of tourism. Informal camping is largely unmanaged, and there are increasing environmental problems associated for example with waste disposal, and dune destabilisation. There are direct impacts to the reef mainly due to water-based activities, such as damage caused by anchor chains, the depletion of fish stocks through over-fishing, and the removal of coral and shells. The land based activities, noted above, also have indirect impacts on the reef.

Such impacts are a reflection of a contested institutional environment in the Ningaloo Coastal Region. Some tourism operators dislike the Government agencies regulating their activities and collecting fees from them. The operators, and also the State tourism agency, Tourism Western Australia, raise concerns about the planning and environmental constraints imposed on their growth plans. Fishing interests dislike the imposition of catch quotas, the designation of some areas as marine sanctuaries and the closure of others to recreational fishing. Some operators also resent paying CALM licence fees for access to National Parks and interaction with whale sharks. In addition some Government agencies have been reluctant to co-

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operate with each other due to contested jurisdiction. For example, the Department of Fisheries, and CALM, contested the management of fish resources in Marine Parks, and both disliked the involvement of the Environmental Protection Agency (EPA) in assessing environmental impacts in their areas of jurisdiction. The Department for Planning and Infrastructure (DPI) is another key player in the region with its planning role, and Crown Land, transport and pastoral lease involvements, raising tensions with CALM in relation to land management responsibilities. Discussions with Government agencies also revealed competition for resources between the tourism operators, pastoralists, horticulturalists and fish processors vying for the use of finite supplies of potable water in a remote and arid area.. Increased use and costs can threaten the very viability of these industries, and certainly any capacity to expand.

As such, the careful planning of future tourist developments and the management of existing activities and accommodation in the area is extremely important to the sustainability of tourism in the region. But such planning, and especially the operational management, require sufficient resources. The main government stakeholders – the key state agencies (CALM and the DPI), the regional authority (Gascoyne Development Commission), the local authorities (the shires of Exmouth and Carnarvon), have limited resources, and this unique area can be vulnerable to over, and inappropriate development. It was in this context that a longitudinal series of visitor surveys was initiated to seek to estimate the value of tourism to the region, and to give those wishing to better manage tourism a strong argument, and hopefully additional resources, to pursue sustainable tourism initiatives for this most important environment

Research methodology

A number of studies have been undertaken in several countries, including Australia, which seek to place an economic value on natural areas. These range from the holistic view of total net benefits of such areas to the community, to much narrower direct spend approaches. The holistic views extend beyond the market values of goods and services, including also the non-market values that society places on natural areas (Carlsen, 1997). Some non-use values include, for example, existence and bequest values. The former reflect the benefit of knowing that protected areas exist even though a person is unlikely to visit or use them; the latter has intra- and inter-generational dimensions, relating to the benefit of knowing that others benefit or will benefit from the protected area. Such non-use values are particularly difficult to measure, and this study uses the more limited and quantifiable direct spend approach; however the wider holistic approach will be returned to later in the paper.

The focus is on the market value economic impacts of the use of the tourism goods and services provided by natural areas. Such economic impacts can be subdivided into the conventional three groups of: direct impacts, measured through visitor expenditure and employment in the tourism sector; indirect impacts in other sectors, with associated production of tourism related goods and services; and induced impacts, through the consumption activities of those employed in tourism. Total economic impact can be estimated by applying a form of multiplier analysis, from complex input-output analysis, to the use of a simple rule of thumb ratios derived from experience of comparable tourism locations and activities. This research

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concentrates on the initial direct spend of tourists in natural areas, and as such provides a minimal and very conservative estimate of the economic value of tourism in such areas. The merit of such an approach is that it can be evidence based, drawing on real data of tourists' economic activities – which can provide powerful information in the contested stakeholder environment.

There are of course, even in the direct spend approach, a range of approaches to collecting the evidence (Stynes, 1999). The lightest touch, least resource intensive, is to draw on expert judgement to estimate tourism activity from background knowledge of the location and possibly comparative sites. A second approach can draw analogies from similar locations and, using existing counts of visitor numbers, can apply for example standard measures of spend per visitor type - such as \$x per day per overseas visitor, and \$y per day per national visitor. Thirdly, and as used in this research, primary data can be collected by a sample survey of visitors in the region of interest, to estimate direct visitor expenditure, and spending by visitor type, activity and other relevant dimensions. In general, the higher the levels of good primary data for visitor numbers, daily visitor spend and average length of stay, the more reliable will be the assessments.

The primary data source is a longitudinal survey conducted by staff from Curtin University, Perth, Western Australia, along the Ningaloo Coast from 1997 to 2003. The surveys, conducted by Wood, colleagues and students from the University, were primarily in April each year, which coincides with the arrival of whale sharks in Exmouth, but some surveys were also carried out in September to provide information on seasonal variations. The surveys used a questionnaire which was distributed to sample groups of tourists, and was organised to cover all accommodation types. The questionnaire was consistent between years, and was largely completed on a face to face basis with the interviewer and interviewee. The approach provided approx 200 completed responses annually. All the surveys collected information on a range of variables which sought to clarify, and to explain, the level and make-up of direct spend in the study area. The data sets gained from the surveys included (i) visitor expenditure in the region; and information on (ii) visitor place of origin, (iii) accommodation, (iv) activities, (v) household income and (vi) visitor age. The underlying hypothesis was that there was a dependent variable (per capita daily expenditure) which was explained to varying degrees by the other independent variables (origins, age, accommodation type, income etc.).

In addition, questions were included on 'substitution' and 'attribution' of visits to the area. These were at the request of one key stakeholder, the Western Australian Treasury, which was only interested in the inclusion of intrastate tourists if the natural asset retained them in Western Australia, leading to the requirement of a substitution question which asked intrastate travellers whether they would visit the area if the natural asset, Ningaloo Reef, did not exist. Similarly, the Treasury required a method of attributing the visit to a natural asset: a Marine Park, a National Park or a forest. 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 the relevant agency's (CALM), management of natural areas. Some tourists resented the charges levied, and the limitations placed on access and on activities, by CALM. Therefore, it was found that the most reliable method of attributing visits to the natural area was through the activities question on a survey—

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with reference to activities such as whale shark watching, snorkelling, diving and fishing.

The direct value of tourism

Longitudinal survey data collected from 1997 to 2003 reveal that the direct spend from tourists in the town of Exmouth alone is in excess of \$80 million annually with visitor numbers of around 100,000. Survey data for 2003 for the Ningaloo Coastal Region including the Coral Bay to Exmouth stretch of the Ningaloo Coast, provided direct spend data of \$81.30 per person per day (Table 1). This spend figure varied dramatically on the basis of where tourists stayed. For example, those staying in the town of Exmouth spend approx. \$120 per day whereas those staying in CALM camp grounds or on stations spend approx. \$50 per day.

Table 1: Average Visitor Expenditure: Ningaloo Coastal Region (2003)

Expenditure Items	Expenditure pp/pd (\$)
▪ Travel	14.60
▪ Accommodation	18.10
▪ Food and drink	18.50
▪ Activities	15.40
▪ Equipment	10.00
▪ Other	4.70
▪ Total	81.30

Source: Carlsen and Wood (2004)

The total yearly expenditure of all visitors to the Ningaloo Coastal Region was estimated at \$138 million, by multiplying the average daily per person expenditure by the average length of stay in the region (9 days) by the average number of annual visitors (domestic and international) to the region (Shires of Exmouth and Carnarvon) over the past four years (188,700).

The 2003 survey results showed the distribution of visitor origins as 48% intrastate (W. Australia), 12% interstate (elsewhere in Australia), and 40% overseas. These findings are fairly consistent with previous surveys conducted in 2000, 2001 and 2002, but they may show a higher proportion of international tourists than at other times of the year because of the coincidence with the whale shark season which is the region’s major international attraction. It is also evident from an analysis of longitudinal data that the number of international travellers was lower in 2003 than in earlier years possibly due to the impact of SARS and the nightclub bombing in Bali.

Table 2 provides a summary of accommodation types used by the 2003 visitors. The figures are well in excess of 100% since many visitors use a range of accommodation types during their visit. The figures clearly show the importance of campgrounds and backpackers accommodation, although the motel/hotel sector is important, particularly for international visitors.

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Table 2: Visitor Accommodation: Ningaloo Coastal Region (2003)

Accommodation type	%of respondents
Campground	73.1
Backpackers	28.2
Motel/hotel	16.5
Caravan park	13.1
Cabin/chalet	7.3
House	5.9
Other	3.1

Source: Carlsen and Wood (2004)

Other findings from the surveys showed that over 60% of visitors used their own vehicle to reach the region; approximately 10% each used a scheduled bus, plane or hire car. The main activities undertaken while in the region are set out in Table 3.

Table 3: Activities undertaken by visitors to the Ningaloo Coastal Region in 2003

Activities undertaken	% of respondents (No. 1 activity)
▪ snorkelling from the shore	29.7
▪ swimming with whale sharks	18.6
▪ diving from a boat	10.2
▪ snorkelling from a boat	9.6
▪ sightseeing	5.9
▪ fishing from a boat	5.6
▪ fishing from the shore	4.6
▪ swimming	4.3
▪ lying on the beach	3.7
▪ others	2.4

Source: Carlsen and Wood (2004)

The intrastate substitution factor was estimated at 18.5%, this being the percentage of Western Australian residents who indicated that, in total, they would have either holidayed in another State or overseas or stayed at home if the natural attractions of the region did not exist. Similarly, the attribution value, of how much of visitor expenditure can be attributed to the natural environment was estimated to be at the minimum 90%, on the basis of the following data: 90% of visitors reported that 'natural environments' were the main reason for visiting the region; and 94% of activities undertaken were nature-based. As such, the estimated yearly expenditure of visitors attributable to the 'natural environment' can be crudely estimated as 90% of \$138 million, giving an attribution total of approximately \$124 million.

Explaining visitor spending

The previous information also provides a guide to the main explanatory factors behind the level of direct spend. Visitor origin, accommodation type, activities pursued, and possibly other factors, such as visitor age and income characteristics, are obviously worthy of consideration, but how significant, relatively, are such factors? A wider data base, bringing together the 2002 and 2003 survey data, was used to explore relationships between variables, as noted in the earlier discussion on research methodology.

The key data sets used for this analysis provided a large data set of the most comprehensive information. After screening for outliers and incomplete returns, the dataset constituted 330 returns. The data were organised into agreed categories, and then processed using the SPSS package. Relevant categories included, for example: origins of visitors (overseas, interstate and intrastate); accommodation type (campsite, caravan park, backpackers, hotel/motel etc.); activities (by type); and typical income and age categories.

Analysis revealed that in the Ningaloo Coastal Region, there are statistically 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, as outlined below). Daily expenditure is highest amongst international and intrastate visitors and decreases with the age of respondents. The inverse relationship between age and spend may reflect the large number of elderly campers who visit the area for extended periods from April to September (see Table 4). The other key explanatory variables are visitor activity (Spearman – 0.317) which can be attributed to the high cost of swimming with whale sharks (\$300 per head) and scuba diving which usually costs around \$100 per dive, and accommodation type (Spearman 0.394) since there are large numbers of campers in the cohort. In summary daily visitor spend:

- 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).

Table 4: Correlation of key variables: Ningaloo Coastal Region (2002 and 2003)

Variable	Correlation with visitor expenditure	
	Coefficient	Significance
Visitor accommodation	0.394	at 0.01 level
Visitor place of origin	0.360	at 0.01 level
Visitor activities	-0.317	at 0.01 level
Visitor age	-0.242	at 0.01 level
Visitor household income	0.045	

Source: Wood et al (2005)

Managing visitor impacts and some implications of direct valuing of tourism

As noted earlier in the paper, increasing tourism activity can have negative as well as positive impacts in the region, especially on the physical environment. Our research (see Wood and Hopkins, 2004) identifies such negative impacts particularly on some of the coastal stations, south of Exmouth, and at Coral Bay. Many of these impacts can be attributed to incremental growth and to the absence of appropriate plans and management regimes. This finding is in accordance with the work of Eagles (2002) and Moscardo et al (2001) who assert that the type of management of tourism developments influences the degree of environmental impact more than the volume of visitors. More specifically, Weaver (1999) argues that a greater number of tourists with appropriate facilities, such as sewerage treatment, will have less of a negative impact on the environment than a smaller number of tourists without such facilities. The lack of such basic facilities at both Coral Bay and on the coastal stations, and the lack of management of activities on the stations therefore present some important problems for the environment. The future of tourism in the region depends on its sustainability and on the maintenance of the natural areas (Tyler and Dangerfield 1999, Ko 2001 cited in Burridge et al, 2002), the very attribute that attracts visitors to spend their discretionary income in the Ningaloo Coastal Region rather than at other competing destinations outside Western Australia.

It is in this context that valuing the tourism activity in natural areas can have a transformational potential for the better management of such areas, and recent actions by relevant stakeholders provide some positive examples from this case study. The framework for these actions has been provided by the Western Australian State Sustainability Strategy (DPC, 2003), and by the Ningaloo Coastal Regional Strategy: Carnarvon to Exmouth (WAPC, 2004). The State Sustainability Strategy, under the heading of 'Hope for the future', aims to co-ordinate development across the state, in accordance with the principles of sustainability. The preparation and release of the Ningaloo Coast Regional Strategy was one of the identified actions of the State Sustainability Strategy, as specified:

Complete the (Ningaloo coastal) regional strategy to define the location and character of preferred development and use of the coast in the context of the proposed world heritage nomination. Ensure adequate planning and development controls are established to implement the outcomes of the strategy (DPC, 2003).

The 'Ningaloo Coastal Regional Strategy' followed the release of a discussion paper, 'Future directions: Sustainable tourism and land use scenarios for the Carnarvon-Ningaloo coast', in July 2003 (WAPC, 2003), and subsequent assessment of submissions and correspondence. There was extensive consultation on a range of options, involving public information sessions, community planning days, and direct consultation involving State agencies, local government, other key stakeholders and the general public. Four options were canvassed, all underpinned by a set of common presumptions – relating for example to the protection of ecological values, the importance of retaining a 'remote and natural experience' for visitors, and of concentrating high order and high-impact development, infrastructure or tourist

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facilities, in the two 'gateway towns' of Carnarvon (in the south), and Exmouth (in the north):

These shall include a range of accommodation, food services, groceries, automotive service, information, tours and packaged activity options and other amenities. All future residential releases shall be appropriately located in Carnarvon and Exmouth in order to capitalise on existing infrastructure and services available for residents (WAPC, 2003).

The four options proposed a set of different levels of development for the smaller settlement of Coral Bay, and a range of from none to three or more consolidated low-impact minor development nodes along the intervening stretch of coast between the more substantial settlements. The consultation document made considerable use of the data on tourist direct spend and associated characteristics collected by Wood et al (2003), to support the concentration of the development in towns and to seek to restrict informal camping on coastal stations (Figure 2).

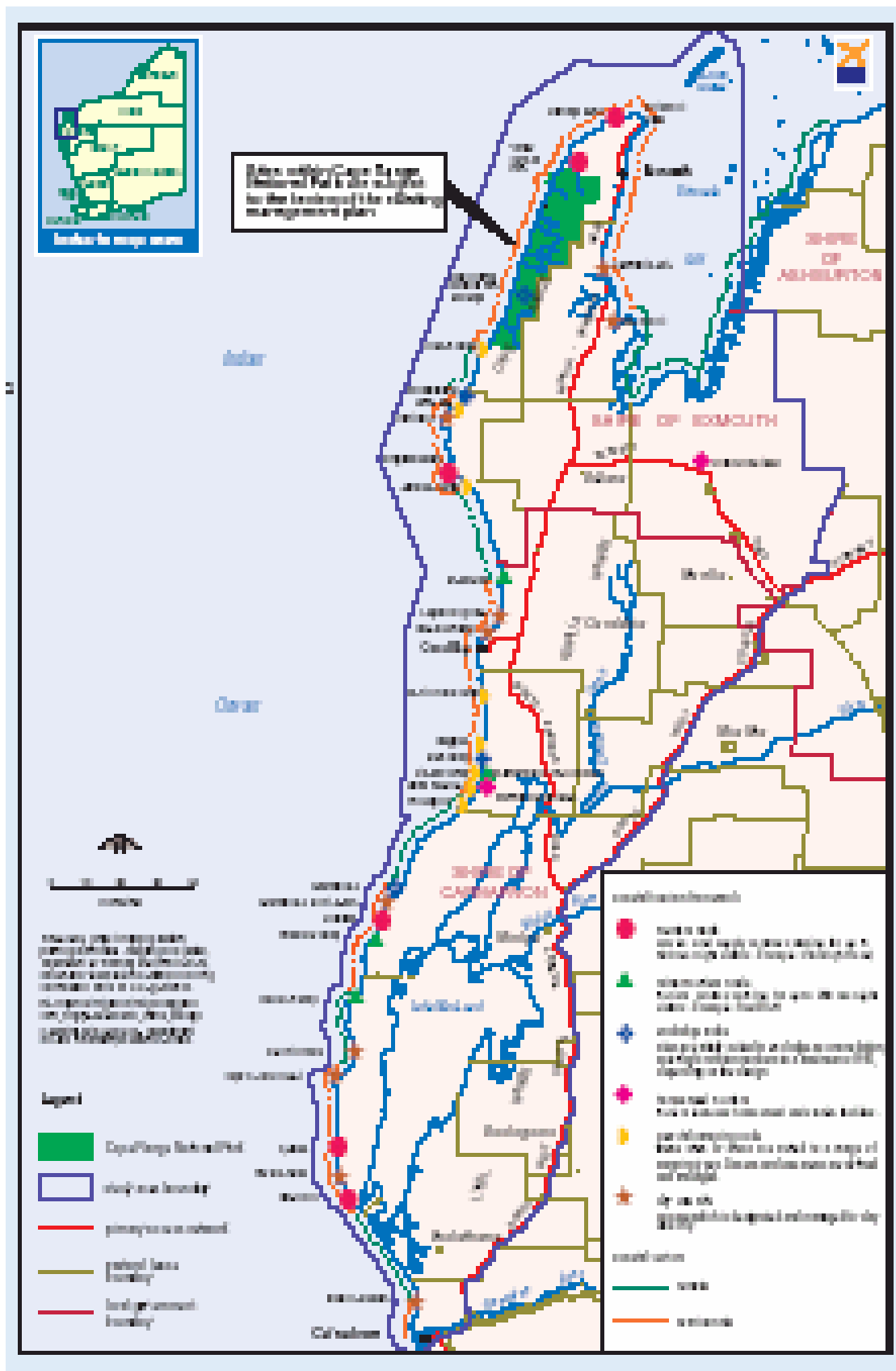


Figure 2: Ningaloo Coastal Regional Tourism Framework
 Source: WAPC (2004). (Apologies for map quality, to be corrected for publication).

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In the foreword to the 'Ningaloo Coastal Regional Strategy: Carnarvon to Exmouth' (WAPC, 2004), the Western Australian Premier, Dr. Geoff Gallop, stressed that 'without careful management, the Ningaloo Coast is in danger of being *'loved to death'* through unsustainable people pressure and inappropriate development'. He reiterated the WA Government's vision to protect its world-class natural areas whilst enabling sensitive development of the region as a sought after nature-based tourism destination for intrastate, interstate and international visitors. To achieve the vision, the WA Government is taking a range of actions. These include, of course, the production and implementation of the Ningaloo Coastal Regional Strategy. Additionally, and associated with the Strategy, the WA Government is pursuing World Heritage listing, expanding the Ningaloo Marine Park to include the entire Ningaloo Reef, and putting additional resources into management and protection of the area. These actions are now discussed further, starting with the important last action.

The Department of Conservation and Land Management (CALM) has operated on a shoestring budget in the region and has been unable to adequately manage the increasing tourism pressures, especially along the remoter coastal areas. As a result of the research on valuing tourism, as acknowledged by the Minister for the Environment (quoted in '*West Australian*' newspaper, September 2005), CALM's budget for the development and maintenance of park infrastructure has been substantially enhanced (Box 1). This major increase should help to quickly improve the resourcing and management of the Ningaloo Coast natural areas. Another quickly implemented action has been the establishment of a dedicated committee, the Ningaloo Sustainable Development Committee (NSDC) to co-ordinate and facilitate the implementation of the Regional Strategy, to prepare an environmental management framework, to build stakeholder partnerships and several other functions. It will be advised by the Ningaloo Coast Advisory Committee (NCAC), and supported by the Ningaloo Sustainable Development Office (NSDO).

Box 1: Influencing the funding of national parks infrastructure

- From letter to David Wood, from Jim Sharp, Director of National Parks, CALM, WA (April 2005).

'The research into the direct economic value of national parks, marine parks and forests in Western Australia has been extremely helpful in defining and quantifying values other than the obvious environmental and biodiversity values that exist in protected areas. Such information is invaluable in establishing a context for Government, industry and the community of the importance of protected areas.

The research results assisted CALM in developing a strong business case to Government for greater funding of national parks, marine parks and other areas managed by CALM to ensure that the underlying natural, cultural and built assets are maintained to the degree that they are support to the industries and communities that depend on them for social and economic reasons.

For the 2004/05 financial year CALM was successful in obtaining \$15.95 m in capital works funding for the development and maintenance of park infrastructure. The Government has committed a total of \$37.5 m over the four years to the end of 2007/08. While the business case that formed the basis of the successful bid consisted of a number of strong arguments for increased funding including visitor risk, public liability issues, meeting national standards in asset management and increasing levels of visitation to parks, the economic research was a significant element in the overall case.'

- From Marine Conservation Newsletter, CALM, WA (Issue 10, June 2003).

'Marine Parks Bring Economic Benefits to the State

The longer-term environmental benefits of conservation programs are well understood and, as a result, are well supported by the community.

By contrast the economic benefits of conservation programs have, until very recently, not been assessed and, as such; these benefits are poorly appreciated by the public. A recent study, by Dr. David Wood from Curtin University, on the economic benefits of tourism to the Exmouth area illustrates the economic value of Ningaloo Marine Park to the local and state economies. Results indicated that tourists visiting Exmouth spend in excess of \$85 million per annum in the local area and a further \$42 million per annum in Western Australia getting to Exmouth, visiting other places in the region and equipping themselves for their holiday. The study identified that Ningaloo Marine Park is a primary draw card for international visitors, with almost 90 per cent of respondents from abroad stating the marine park was the main reason for visiting Exmouth compared to almost 80 per cent of domestic respondents.

Provided tourism is managed sustainably, the substantial tourism revenue generated by the establishment of marine conservation reserves provides a significant economic bonus to regional communities in addition to the more well known conservation benefits. The many published papers that highlight the capacity for natural areas to stimulate significant tourism and economic flow-on benefits to local communities highlights the conclusion of a recent economic analysis that there is a clear and compelling economic case for strengthening attempts to conserve what remains of natural ecosystems.'

- From letter to Dr. David Wood, from Keiran McNamara, Acting Executive Director, CALM, WA (April 2003)

'I am writing in response to your recent forwarding of the preliminary results of your study on local economic diversification using Exmouth as a case study. It was very timely and has been of considerable assistance in the consideration of World Heritage Listing and the future planning for the Ningaloo region, including the review of the Cape Range National Park and the Ningaloo Marine Park Management Plans.'

Some more medium and longer term actions include extending the marine reserve, and gaining World Heritage listing. The Ningaloo Marine Park presently covers an area of 430,000 ha. A substantial extension, which has generated considerable debate, especially amongst the fishing community, was agreed in early 2005. The WA Government also has an agreed policy commitment to seek a World Heritage nomination for the area (as already achieved for the adjacent Shark Bay location), and has commenced a process to prepare its submission to the Australian Government for nomination to the World Heritage Committee of UNESCO. This will involve a strategy statement which involves ensuring that the towns of Carnarvon and Exmouth serve as the gateways to the Ningaloo coast, and that coastal development in other areas is limited to small-scale, low-impact development.

Conclusions: only the tip of the iceberg for transformation potential?

Natural areas are at risk worldwide, yet such areas have great value, including an important role for environment based tourism. However it is often difficult to 'give a voice' to the economic value of the tourism use. Useful data on the economic value of tourism in natural areas are often at best partial, and in many cases non-existent. This article has sought to show that relevant data can be assembled to provide an overview not only of total tourism spending, but also information on visitor

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characteristics, on substitution and attribution factors, and on the key determinants which vitally underpin the visitor expenditure.

Western Australia could be seen as being at the forefront of the contested environment surrounding natural areas. It has an array of very attractive regions, many of which are significant internationally. It also has a strong commitment to sustainable development, but there are stakeholders with conflicting interests in their use of natural areas, and government and other resources to manage these areas are always limited. The direct spend survey approach, developed over several years by staff at Curtin University, for the Ningaloo Coastal Region, provides an example of the methods, nature and value of assembling information on visitor spending. The case study daily visitor spending of approx. \$80 is sizeable and, when totalled, reveals the significant annual injection into the regional economy. From the few studies carried out by others, this level of direct spending appears not atypical for such locations in developed countries (see for example: Lindberg et al, 2002). The Ningaloo Coastal Region expenditure research has been timely in terms of the management of the natural areas. It has contributed specifically in making the case for a bigger management budget for the key government agency charged with conserving and managing the area, and has also influenced the arguments, and stakeholder positions and influence on discussions on the Marine Park extension, and on the development of the Ningaloo Coastal Regional Strategy – recently chosen by the Planning Institute of Australia (PIA) as the best example of coastal planning for Australia for 2004 (PIA, 2005).

The direct spend analysis can be seen as influential by virtue of its evidence based, quantitative, monetised, and easily understandable nature. However, as noted earlier, it does provide only a conservative minimal estimate of the economic value of natural areas. It does not include the National Park direct expenditure on the provision of facilities, and of access to facilities. Nor does it use any form of multiplier analysis to pick up the wider indirect and induced expenditure. Even more important, it does not include a consideration of the wider value of natural areas, including indirect use value (e.g. carbon sequestration, ecosystem services, and future values), and non-use values (e.g. existence values, including biodiversity; ritual values, of particular importance to indigenous peoples; and landscape value). A wider approach, and a longer approach, where it can be argued that natural areas became more valuable over time, by virtue of scarcity value and competing pressures, would no doubt further advance this case – contingent on the development of appropriate valuation tools.

Tourism has the potential to destroy natural areas, 'loving them to death', in the face of competing pressures from key stakeholders. Yet, this need not be the case. Tourism can also give a voice to natural areas, by giving them a value (however partial), and this voice can play a significant transformational role in the debate on the use and management of such areas.

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