Department of Social Sciences

Development and Change in the Whale Shark Tourism Industry at Ningaloo Marine Park, Western Australia

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This thesis is presented for the
Degree of Doctor of Philosophy
of
**Curtin University of Technology**

February 2010

DECLARATION

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

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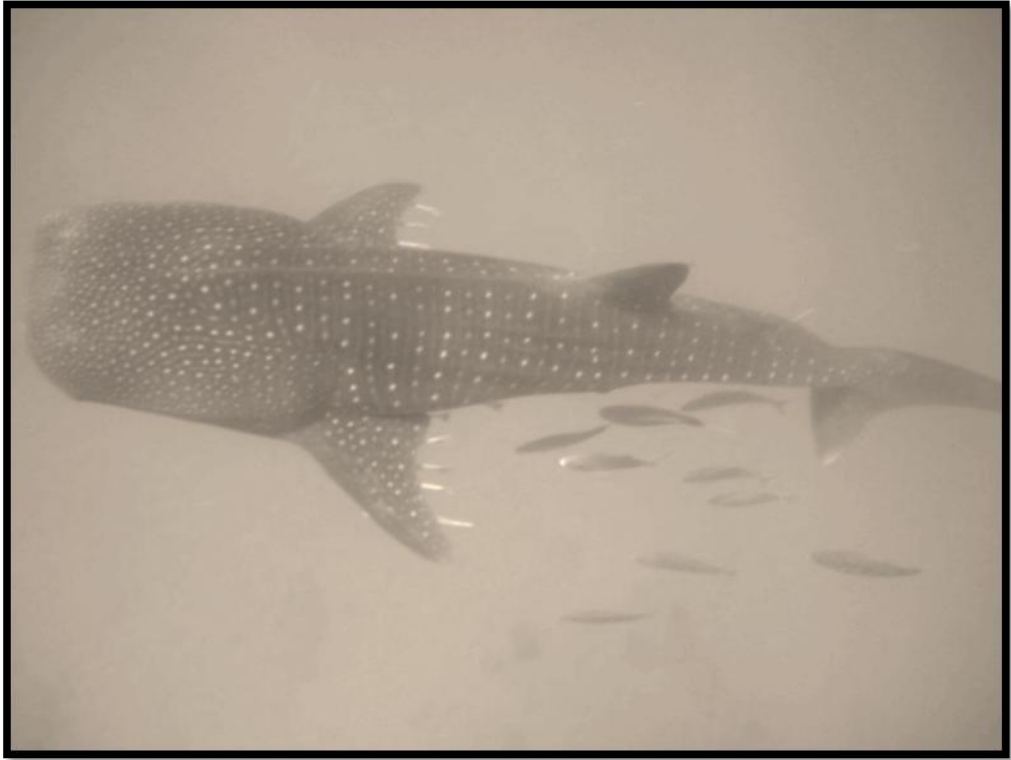
ABSTRACT

Popular demand for tourism experiences in the natural environment, and in particular for human-wildlife interactions, is increasing. Whale shark tourism at Ningaloo Marine Park on the North West Cape of Western Australia is one such wildlife interaction activity that has grown in popularity in recent years. From the late 1980s, when it was a little known specialist activity in a remote location, whale shark tourism has grown into an iconic tourism industry that now attracts up to 10,000 tourists seasonally. The research conducted for this thesis examined various aspects of the industry with a particular focus on the changes that have taken place over the course of the industry's development.

To achieve this objective, data was primarily gathered through a series of participant questionnaires administered over several whale shark seasons. This information was integrated with content analyses of official documentation, tour operator feedback, and field observations. This elicited a rounded perspective of the industry which was contextualised using a theoretical framework for non-consumptive wildlife tourism devised by Duffus and Dearden.

The growth in this tourism industry has been accompanied, over a relatively short period, by a shift in the nature of the participants. Originally specialist wildlife and nature based tourists exclusively focused on the opportunity to swim with whale sharks partook in the tours. Now a much wider cross section, sourced from the general tourist population in the region, wish to swim with the whale sharks. This shift in specialisation was also found to have decreased the amount expended in the region per capita. The specialised tourists, who originally dominated the industry, were significantly higher spenders; so much so that, despite the large increase in participant numbers, the total amount expended in the region by whale shark tourists has remained essentially unchanged.

In addition to this focus on specialisation and expenditure other issues related to the implications of change in this industry over time were investigated. The main means by which tourists found out about the industry were informal marketing mechanisms

such as word of mouth despite the industry being established for over a decade. Furthermore, even in such a remote tourism region, the major constraint on participating in whale shark tours remained financial.

Finally changes in the licence conditions for operating the tours over time were researched through content analyses of the State government's expression of interest processes and responses from tour operators. This approach highlighted both the increasing regulatory demands and the commercial pressures experienced by the tour operators. This suggested that there is a delicate balance between the environmental and economic dimensions of regulation.

Overall the insights gathered from the research revealed the consistently dynamic nature of this tourism system. The results also permitted some development and expansion of the wildlife tourism theory developed by Duffus and Dearden while in turn highlighting the usefulness of this framework in assisting in the management and planning of wildlife tourism industries.

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

Introduction

Increases in affluence, mobility, and leisure in contemporary Western society have resulted in a growing demand for previously non-existent or select experiences. One such type of experience which continues to grow in popularity is the viewing of and interaction with wildlife. In the not so distant past people were largely content to view wildlife through the screen of a television or in the confines of a zoological exhibit. Now increased opportunity and awareness are allowing people to satisfy their desires to experience nature directly in its most unique and pure forms. People are willing to sacrifice large sums of money and periods of time for brief encounters with wildlife. These demands, in most instances, are not directed at the more common species but at those that represent the extremes of the spectrum—the biggest; the most dangerous; the rarest; the most iconic.

Out of all species, arguably the viewing of sharks for the purpose of tourism is most characteristic of this current trend. Although they are still very much a source of moral panic, sharks are increasingly becoming the focus of the wildlife tourists' gaze (Dobson 2008). The central theme of this thesis is the tourism industry that has developed at Ningaloo Marine Park, Western Australia based on snorkeling with whale sharks (*Rhincodon typus*) (Figure 1.1). While whale sharks are filter feeders and do not pose the more obvious threat associated with man-eaters they still inevitably provide an outlet for this desire for 'extreme wildlife encounters'. They not only evoke, perhaps unjustifiably, feelings of danger but they are also the largest of the living fish species. They can only be seen at a few, generally exotic, locations only at certain seasons of the year, and they are very rare and considered to be of high conservation value. Thus they exhibit virtually all of the inherent qualities of an attractive wildlife encounter (Reynolds and Braithwaite 2001).

Figure 1.1: Tourist swimming with a whale shark at Ningaloo Marine Park

Source: Nick Thake

From late March until late June whale sharks migrate to the Ningaloo Marine Park where they feed on the seasonally productive marine environment. Given their docile behaviour and their tendency to swim near the surface they are a very accessible marine animal. Until this tourism industry began at Ningaloo in 1987 the opportunity for the general public to interact with whale sharks was non-existent. A common example used to illustrate this was the fact that famous marine explorer, Jacques Cousteau, only ever saw two whale sharks in his extensive diving experiences. More recently, in the last half a decade, other fledgling destinations for viewing whale sharks have risen in prominence. Nonetheless, Ningaloo Marine Park still remains the major, if not the premier, destination where people experience the elusive and mysterious presence of this species.

Managing the whale shark interaction to minimise negative impacts on the species, whilst simultaneously maximising enjoyment for the tourists, is the foremost concern of the local natural area managers, the Western Australian Department of Environment and Conservation (CALM 2005). Concomitantly, the whale shark tour operators have to manage their businesses to meet the State-imposed conditions on their activities and to run commercially successful businesses. It is commonly accepted that it is the people not the wildlife who more often require management in

natural areas (Hammit and Cole 1998; Manfredo 2002; Orams 2000). Consequently this thesis will focus on the synergies within the whale shark tourism industry by concentrating on data collected from the whale shark tourists and to a lesser extent from the tour operators between 2005 and 2008. The application of wildlife tourism theory and literature to this case study will assist in developing a more complete picture of this industry particularly in respect of the changes that have arisen since its inception.

Scope

The objectives set out below will be achieved through the use of a number of earlier data sets. Past research in 1995 and 1996 on whale shark tourism at Ningaloo Marine Park (Birtles, Cuthill, Valentine, and Davis 1995; Davis 1996; Davis 1998; Davis, Banks, Birtles, and Valentine 1995; Davis, Banks, Birtles, Valentine, and Cuthill 1997; Davis and Tisdell 1996; Davis and Tisdell 1998) collected information on the demographic, experiential, and demographic characteristics of these early whale shark tourists. This work was published in several journals providing a full complement of findings which will be used for comparison purposes in this thesis. In addition, early records and documents significant to the industry have been sourced. Cumulatively these insights will provide the basis for a unique longitudinal perspective on a wildlife tourism initiative.

Research Question and Objectives

 The research question being addressed is:

"What are the management implications of the changes occurring in whale shark tourism at Ningaloo and how can these changes be related to the wildlife tourism literature?"

The specific objectives of this thesis are to:

- Describe the demographic characteristics of current whale shark tour participants;

- Determine those experiential aspects of the whale shark tourism experience that have the potential to influence management perspectives;

- Evaluate the expenditure patterns of whale shark tourists in the local region including determination of the amount directly attributable to the presence of the species;

- Analyse the changing licence conditions and demands placed on the tour operators using information from the earliest possible date;

- Conduct a longitudinal comparison of the industry using data collected in 1995 and 1996 as a reference point;

- Integrate the research findings with established wildlife tourism theory and literature through the application and extension of Duffus and Dearden's (1990) model for non-consumptive wildlife tourism;

- Make relevant recommendations regarding the management of the whale shark tourism industry at Ningaloo from both conservation and commercial perspectives.

Significance

This study provided an opportunity for the implementation of several components of wildlife tourism theory through the investigation of a specific industry and the integration of data from multiple sources and over a significant time frame. Having access to data sets up to a decade apart and which extend back to the industry's very

early stages has facilitated the engagement of theory to assist in explaining the changes observed in the industry over this time period.

Overview of the Thesis

This thesis comprises seven chapters. Chapter One introduces the study topic and the outlines the basis for undertaking this research. Chapter Two examines the literature on wildlife tourism with particular reference to Duffus and Dearden's wildlife tourism framework. Chapter Three provides background information on the Ningaloo region and on whale shark tourism at Ningaloo Marine Park. Chapter Four, compares more contemporary findings on whale shark tourists' experiences with those from the earlier research. Chapter Five also provides a comparison between recent and earlier data but focuses on tourist expenditure patterns. Chapter Six covers a neglected aspect of wildlife tourism management by examining the topic of the marketing habits of whale shark tour operators. Chapter Seven also takes a novel approach in terms of wildlife tourism research by applying a leisure constraints framework to discriminate between participants and non-participants. Chapter Eight presents findings and discussion from a content analysis of the tour operator licence expressions of interest over a ten year period and the responses to a questionnaire survey of tour operators on this topic. The concluding chapter discusses all these findings with reference to both their contribution to wildlife tourism literature and theory and to the management of the local whale shark tourism industry.

CHAPTER TWO

LITERATURE REVIEW

Introduction

> *Thus, it should almost go without saying empirical research is enhanced by being based on explicit theory as a framework for asking questions, while the results are interpreted—and perhaps later reinterpreted—within the context of that theory and new and evolving theories. Conversely, theory does not exist in a vacuum, but needs to be tested, supported, or modified in the empirical realm.*
>
> (Jackson 2005a pp10-11)

Cohen (1995) observed that, while there is an abundance of theoretical perspectives in tourism, most have escaped vigorous empirical testing. Compounding this, there had been an explosion of field studies which were not clearly connected to a theoretical base (Cohen 1995). A decade and a half has passed since Cohen made this observation, and, although tourism as an area of research has progressed considerably, there is still scope in many areas for greater integration of theory and empirical research. Despite wildlife tourism's relatively recent emergence as a discrete academic field, sufficient time has lapsed and sufficient literature has been accumulated for greater insights into its underpinnings to evolve. Consequently, the purpose of this literature review is to look at theoretical developments in wildlife tourism research with a particular focus on Duffus and Dearden's (1990) wildlife tourism framework.

Wildlife tourism can be broadly viewed as any tourist activity that has wildlife as its focus of attraction. This can either be in the form of consumptive (i.e. hunting and fishing) or non-consumptive (i.e. wildlife watching) activities and can be based on either captive or free ranging wildlife (Higginbottom 2004). Duffus and Dearden coined the term non-consumptive wildlife-oriented recreation (NCWOR) in 1990. They focused their attention on the non-consumptive free ranging form: "a human recreational engagement with wildlife wherein the focal organism is not purposefully removed or permanently affected by the engagement" (Duffus and Dearden 1990 p215). For the purpose of this thesis 'wildlife tourism' which focuses on non-consumptive uses of wildlife will be used in place of NCWOR since this is the more

the frequently employed term in the wider literature. Duffus and Dearden (1990) essentially hoped to demonstrate through their conceptual framework for wildlife tourism, that a multi-disciplinary approach is required by both managers and researchers in order to enhance wildlife conservation and the visitor experience appropriately. Until recently their wildlife tourism framework has remained a highly respected, but largely untested model, in wildlife tourism theory. Given a number of recent developments in the literature of wildlife tourism and in tourism more generally it is pertinent to discuss Duffus and Dearden's wildlife tourism framework in light of these recent studies.

Duffus and Dearden (1990) were the first to propose a conceptual framework for understanding the complexities of non-consumptive wildlife tourism (Figure 2.1). They brought together research from a range of different disciplines, including biology, recreation, tourism, animal behaviour, and wildlife management to create their model. Their work was conceived at a time when there was a transition in wildlife tourism management, from perspectives that focused on bag limits, to a multi-disciplinary approach attempting to understand and manage the complexities of wildlife tourism. Their framework identifies three major dimensions of wildlife tourism interaction, namely, the wildlife tourist; the focal species and its habitat; and the historical relationships between them. From this platform they then discuss the relationships between these components of wildlife tourism.
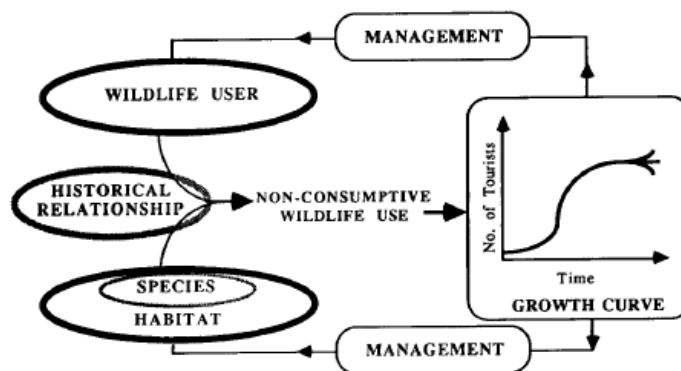
Figure 2.1: Duffus and Dearden's wildlife tourism framework
Source: (Duffus and Dearden 1990)

Duffus and Dearden state that the popularity of a species for tourism is largely dictated by the historical relationship between humans and that particular species.

They contend that this demand for the physical or experiential consumption of a particular species is a direct result of prior human impact on the species and its environment. That is, tourists are drawn to species that are rare or uncommon, which is often a result of increased past or present negative anthropogenic pressures. On the other hand, the opposite is true for animals that are regularly or readily seen, such as domestic pets and agricultural species. In addition to the availability of a species, tourists' cultural perceptions also govern the degree to which species they hold different species in high regard, with animals that are perceived as dangerous to humans likely to be more popular than innocuous species. The second component of the framework concerns the wildlife itself. Duffus and Dearden contend that wildlife tourism typically relies on the regular occurrence of the target species over a relatively small area. Furthermore, they argue that it is integral, albeit difficult, if the tourism interaction is to be sustainable that behavioural and reproduction indicators can be identified since this will enable monitoring to determine potential negative impacts from the human-wildlife interaction. Ultimately in their framework, Duffus and Dearden consider the wildlife tourist. This element is constituted by people seeking non-consumptive encounters with wildlife for the purpose of recreation. They argue that a combination of personality variables, including motivation, and socio-economic status both enable and drive a person to seek a wildlife encounter.

Duffus and Dearden's next step, after defining the major components of wildlife tourism, involves the development of the interaction between these three dimensions of wildlife tourism. They state that, regardless of the type of interaction, whether it involves a large commercial operation or is centred on an individual's initiative, wildlife tourism industries are dynamic and involve change, both at a user and at a site level. Specifically, as the site changes, the type of user it attracts will change, and *vice versa*. Moreover, they argue that, initially, a wildlife tourism activity will attract explorative users who, in the context of wildlife tourism, are predominantly wildlife specialists. That is, they are people who are knowledgeable and skilled, and require minimal infrastructure and interpretative materials in order to achieve their wildlife interaction experiences. Due to their increased awareness of the environment and their smaller numbers, there is normally only minimal impact on the environment and the focal species. As the popularity of a site increases, they argue, there is an increase in the proportion of generalist wildlife tourists. Generalists, who occupy the

opposite end of the spectrum from specialists, require greater facility development and more mediation between themselves and the focal species. Furthermore, without adequate management interventions, generalists place greater pressure on both social and natural environments. Thus, as a wildlife tourism activity evolves to meet the demands of generalists, specialists are marginalised and are likely to seek other out other areas. To explain these dynamics, Duffus and Dearden (1990) integrated three tourism/recreation models—Butler's tourism life-cycle, Bryan's leisure specialisation continuum, and, lastly, the Limits of Acceptable Change concept to produce the model seen in Figure 2.2.
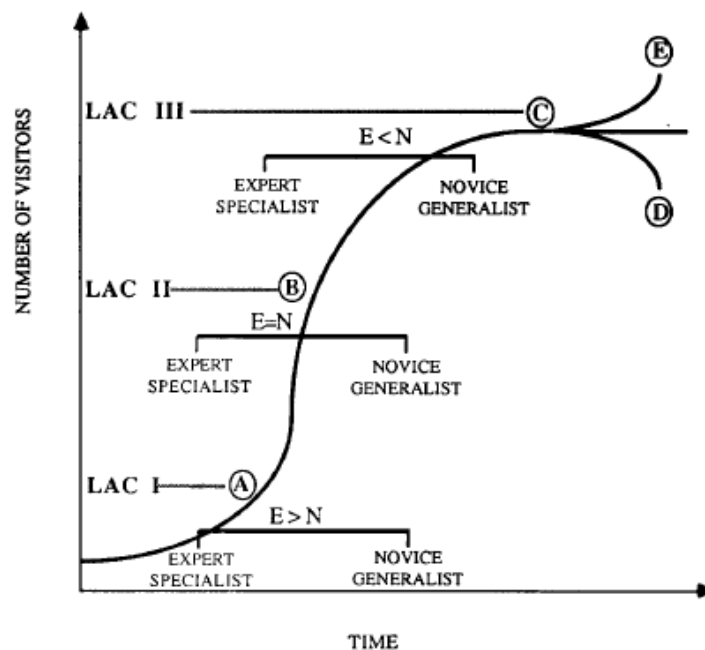
Figure 2.2: Duffus and Dearden's wildlife tourism framework, relationship between user and site evolution
Source: (Duffus and Dearden 1990)

Other Wildlife and Nature-based Tourism Concepts

Duffus and Dearden were not the only theorists to conceptualise wildlife tourism. A few years later Orams (1996) published his model of wildlife tourism interaction. However unlike Duffus and Dearden, Orams focused solely on classifying the different management alternatives—physical, regulatory, economic, and educational. In particular, he advocated the potential of interpretation (educational management

strategies) to enrich and control human wildlife interactions. Several years later Reynolds and Braithwaite (2001) published their conceptual framework for wildlife tourism, taking a somewhat similar perspective to that offered by Duffus and Dearden. Using a systems framework, Reynolds and Braithwaite (2001) categorised the major components of wildlife tourism—the   product; favorable conditions; motivations of participants; quality factors of the experience; and impacts on the wildlife. They consolidated their discussion to create a matrix of wildlife tourism encounters with four degrees of encounters, ranging from high effect/enthrallment experiences that need to be carefully managed to low impact quasi-wildlife experiences such as wildlife text books. Reynolds and Braithwaite (2001) adopted an opposite emphasis to that of Duffus and Dearden, giving greater attention to dissecting and categorising wildlife tourism rather than providing a focus on change management. However, while their model is highly descriptive and provides intricate detail on various aspects of wildlife tourism, it does little to provide a predictive model that can forecast development, change, and sustainability in a wildlife tourism situation. While not discounting the benefits of these two later developments, this thesis will focus on Duffus and Dearden's wildlife tourism framework, since it is their focus on predicting and managing change that is most relevant to this study.

As stated by Butler and Waldbrook (1991 p3), "It is clear that tourism is extremely dynamic and that destination areas are constantly changing to meet new market tastes." In Butler and Waldbrook's (1991) accompanying paper they adapted the Recreation Operation Spectrum visitor planning framework to a tourism context in order to conceptualise a Tourism Opportunity Spectrum. Like Duffus and Dearden they positioned tourists on a spectrum of specialisation and also used Butler's tourism life cycle as their backdrop in order to explain the shift from a specialist to a generalist pool of visitors as a tourism area became more popular. Butler and Waldbrook use an example of adventure tourism to represent the different preferences seen in the areas of access, regulation, social interaction, and tourism plant, according to the level of specialisation demonstrated by the tourist. Using examples, they outline the different groups/bodies responsible for each of these tourist areas. While Butler and Waldbrook's model was initially more general and has a wider spatial focus, their use of a similar body of theory to that of the Duffus

and Dearden model to explain and manage tourism demonstrates the value of looking at a tourism situation from both a temporal and a user context.

Butler's Tourism Area Life Cycle

Given the centrality of Bulter's (1980) Tourist Area Life Cycle (TALC) to Duffus and Dearden's framework it is worthwhile examining it in greater detail. Butler introduced his seminal notion of TALC almost thirty years ago, and it has since become the most written about and cited tourism concept (Boyd 2006; Hall 2006). He proposed that tourist areas (in his case resort destinations) undergo a predictable cycle of change over time. Butler's model centred on the 'S' curve that is fundamental to both the product lifecycle and to biological population dynamics. Although consisting of seven different stages, simply, his model suggests that there is an initial stage of discovery followed by a period of exponential growth in tourist numbers. This rapid growth rate then declines leading to a period of stagnation. Thereafter, tourist areas, depending on a range of internal or external factors, can develop in any one of a number of ways, including decline or growth. During these different phases, changes occur in both the number and types of visitors and in the scale and nature of the pressures on the socio-cultural, economic, and natural environments. It is the durability and robustness of this model that has facilitated its application in various contexts (see Lagiewski 2006).

Although it could be argued that wildlife tourism activities do not fit into the destination concept as originally hypothesised by Butler, various applications of the model indicate that the notion of destination is somewhat malleable. Although most works refer to resorts, Beiger (2000) argues that, rather than destinations being viewed as being of a set geographical size, they are better viewed from the perspective of the user (cited in Weizenegger 2006). For example, Boyd (2006) states that it is surprising that national parks have been largely overlooked in applications of Butler's concept, since they are becoming increasingly popular tourist destinations and, rather than just being one attraction amongst many, national parks are more and more likely to be the sole focus of a tourism experience. In addition,

national parks are progressively becoming self supporting commercial entities, relying on tourist revenue to validate their existence (Boyd 2006). The same assertion could also be made about specific wildlife tourism activities. This is particularly true for an activity such as whale shark tourism at Ningaloo Marine Park, which is not only iconic but exists in an extremely isolated location. This does not imply that wildlife tourism attractions will necessarily fit suitably into the same frames of analysis as will a resort destination or even that all wildlife tourism attractions can be studied in the same way, but it does not exempt them from use of Butler's model. As Johnston (2001) notes, while the destination concept is based on a destination with particular attributes, modified versions of the destination concept may require concomitant changes to Butler's concept:

> In terms of the existing theory, tourism develops when tourists arrive at a particular destination site, to experience some feature of it, and when business people respond to their presence by developing a tourist industry. Together, the attraction and the commercial area constitute a locale. Thus the spatial scale for which the model is most appropriate, in its present form, would seem be a resort town that has an environmental or cultural resource as its basis of attraction, plus a recreational business district (or the potential for one to be built). Studies of destinations at scales much larger or smaller than this may require modification to the model because the institutional nature of development would probably be different. (Johnston 2001 p10)

Supporting Johnston's argument, Duffus and Dearden (1990) contend that the shape of Butler's curve is likely to vary according to the context of the wildlife tourism site in which it is tested. Furthermore, they assert that data from a diversity of sites (including national parks and World Heritage Areas) are required in order to understand the trajectory of Butler's curve according to the different types of protection, management regimes, and commercial uses exhibited at various sites. Weizenegger (2006) argues that protected areas are consistently more highly regulated than are other tourism areas. Furthermore, she argues that it is the unit entity (traditionally visitor numbers) that dictates how all the other variables will be perceived, and therefore that it is this variable that requires greatest consideration.

This contention has not been overly explored in a natural or wildlife tourism setting since Duffus and Dearden outlined their model. There is, however, value in looking at the more conventional use of Butler's framework. A relevant discussion includes the use of alternate variables to the visitor numbers (or unity entity) on the vertical axis. Gale and Botterill (2005) contend that substitute indicators of tourist demand, such as tourist expenditure, may give a better representation of value as well as volume. Strapp (1988), for example, uses the average length of a visitor's stay as the predicting variable. He argues that this creates a more accurate representation of the decline stage of Butler's model since second home owners may take over as conventional tourist numbers decrease. In another example, Johnston (2001) argues for the use of accommodation provision as the unit entity since this is a key indicator of change and is less likely to fluctuate.

Similarly some wildlife tourism situations may be suited to a modified application of Butler's TALC which may thereby enhance its applicability. As stated by Johnston (2001 p9) "In an inductive approach to theory generation, each of these types of destination might require its own sub theory, with a corresponding model, because the resource base providing the foundation for institutional behaviour is different". Dearden, Topelko, and Ziegler (2008), for instance, plot the growth of whale shark tourism at several different locations around the world. In their analysis they predominantly used visitor numbers as the unity entity, but for Phuket, Thailand, they substituted participant visitation with the number of dive vessels. Given the opportunistic nature of the wildlife encounters, specialised whale shark tours are not available in Phuket. This fact made estimates of the number of whale shark participants difficult. And, since their numbers are not restricted, the number of tour vessels was an adequate substitute measure for plotting the local growth of the whale shark tourism industry. Using vessel numbers and drawing from other knowledge sources Dearden et al. (2008) conclude that Phuket's whale shark watching industry has peaked and is now in a stage of decline. Conversely, as is more likely in developed countries, it is not uncommon for the number of boats, buses or tour groups to be limited through restrictive licensing systems for viewing wildlife. As a consequence, the viewing platform often forms the rate limiting factor. In this situation, it is important to consider the impact that such restrictions have on the growth of Butler's curve and, if relevant, to incorporate other indicators of growth in

modifications of the model. One such indicator cited by Duffus and Dearden (1990) as being important in measuring the maturation of an industry is user specialisation.

Specialisation

Just as important in the wildlife tourism context is determining the characteristics of the user who participates in this activity. Butler (1980) noted in TALC that, as a destination progresses through the life cycle stages, it will attract different types of tourists from one stage to the next. Duffus and Dearden refined this concept to apply it more specifically to wildlife tourism by incorporating the specialisation continuum developed by Bryan (1977) for a range of outdoor leisure pursuits, including bird watching. Bryan (1977) argued that recreationalists occupy points along a continuum of specialisation, with novices at one end and experts at the other. Furthermore, he argued that the type of experiences sought by these recreationalists is governed by where they sit on this continuum. Bryan (1979) hoped that his specialisation concept would contribute to the direction and consolidation of recreation research and assist natural resource managers in meeting their environmental and social goals.

Bryan's research stemmed from the realisation that outdoor recreationists, even amongst those participating in the same activity, are a diverse group. As Mehmetoglu (2007) states, the definitional approach to nature based tourism can be misleading since it assumes nature based tourists are homogenous. It is much more likely that people participating in the same activity do so for various reasons and come from a diversity of backgrounds. Lemelin, Fennell, and Smale (2008) contend that recreation specialisation theory has somewhat blurred the divide between wildlife tourist profiles and environmental context by combing a diversity of measures. As Bryan (1979 p2) states, "Development of a conceptual framework and typology of recreationists relevant to resources management decisions and strategies is different from a simple *ad hoc* classificatory system where more or less arbitrary classes are constructed to summarize data and form descriptive taxonomies." .

As noted, Bryan's work was intended to be more inclusive and encompassing then simply identifying one or two characteristics of the outdoor recreationists. He

therefore used a multi-dimensional framework to fit recreationists into his specialisation spectrum. The variables he used for this purpose included commitment; preferences for activity settings; skills; and equipment ownership. However, from a wildlife tourism perspective, Duffus and Dearden (1990) noted that some of the variables, such as equipment, may not vary significantly amongst the different specialisation levels and thus that they may not be equally relevant. Furthermore, they added that knowledge of the target species and its environment, and involvement in conservation initiatives could also be important indicators of expertise in the wildlife tourism context. As Lemelin et al. (2008) state, consensus on the variables defining specialisation amongst researchers has not been reached, which may be a consequence of the largely open way in which this paradigm was originally postulated by Bryan, allowing for a number of varied interpretations.

Bryan's framework laid the foundation for a number of studies to gain greater insights into wildlife tourist specialisation (Cole and Scott 1999; Lemelin et al. 2008; Malcolm and Duffus 2008; Manfredo and Larson 1993; Martin 1997; McFarlance 1994; Scott and Thigpen 2003). These studies used a diverse range of criteria to assess specialisation in wildlife tourism research. Nonetheless, a number of recurrent themes emerged from these studies, which were largely consistent with the notions originally postulated by Duffus and Dearden (1990). Specifically, novices have a greater interest in the non-wildlife aspects of their tourism experiences than do specialist participants. In addition, they also place more emphasis on the wider range of services and amenities provided at the tourist sites. Specialist users, on the other hand, are more concentrated on the focal species, require detailed interpretation and are more likely to be conservation minded. Two such studies that attempted to further develop the specialisation construct in relation to wildlife tourism are discussed in more detail below.

Firstly, Lemelin et al. (2008), who studied specialisation in polar bear wildlife tourists, argued that many specialisation studies have overlooked certain characteristics of specialisation by being over simplistic in their assessments. Consequently, they employed a number of sub-criteria under the categories of: Centrality; General Experience; Equipment Ownership; and Environmental Group Membership (Figure 2.3). Lemelin et al. found that, while there were distinct

differences in degrees of specialisation amongst the participants, most were at the novice end of the spectrum. Furthermore, they found that novices are less likely to be environmentally aware than their more specialised peers.
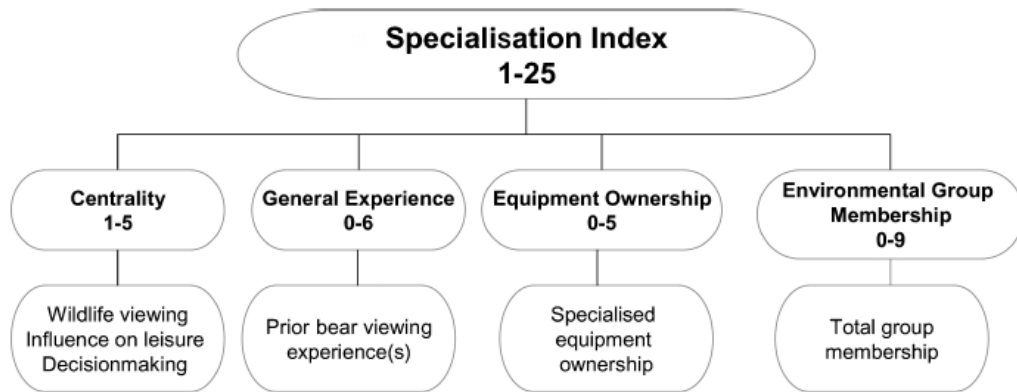
Figure 2.3: Specialisation construct developed for polar bear viewing tourists

Source: (Lemelin, Fennell, and Smale 2008 p50)

In another recent study, a similar predominance of less specialised wildlife tourists was noted by Malcolm and Duffus (2008). They looked at user specialisation amongst participants on commercial whale watching vessels at three different locations in British Columbia, Canada. They also used a refined specialisation index, including the criteria of: previous whale watching and learning experiences; attitude to whale management; general attitude towards the environment; and demographics. They found that, overall, the market was dominated by novices and intermediate users. In addition, they determined that the level of specialisation varied from one destination to the next. One locale—which involved greater travel times to reach, had less infrastructure, and contained fewer tourism activities—attracted a greater volume of highly specialised whale watchers. These findings are consistent with the explanation by Duffus and Dearden (1990) regarding the use of more remote areas and the lower infrastructure demands of specialised users. Furthermore, Malcolm and Duffus (2008) determined that increased specialisation was related to increased environmental awareness and to more realistic expectations of the likelihood of not encountering whales. From their findings, they extrapolated that, if increased conservation values were to be imparted to the participants, then management

objectives should be primarily focused towards novice users and to the destinations that they are much more likely to favour.

Duffus and Dearden (1990) contend that, as a site becomes popular, more specialised users are displaced by less specialised users. These case studies (Lemelin et al. 2008, Malcolm and Duffus 2008) both identify a market that is dominated by users from the novice end of the spectrum. This is despite their selection of activities varying from more mainstream wildlife opportunities, such as whale watching, to seemingly more extreme activities, such as polar bear viewing. It could be that these activities have all been through an exploratory stage of the tourism lifecycle and are now more mature. It is generally assumed and contended that wildlife tourism is a growing subsector of tourism. In addition, opportunities to be involved in apparently specialised activities that were previously a preserve of more dedicated tourists are now plentiful (Dearden, Bennett, and Rollins 2006; Higham, Lusseau, and Hendry 2008). Moreover, the increased availability of wildlife tourism opportunities not only increases the likelihood of novices being involved in any given wildlife tourism activity but also adds an extra consideration to the framing of the specialisation concept.

As Lemelin et al. (2008) suggest, this may be explained by the reasoning proposed by Kuentzel (2001). He contends that "For some, the proliferation of consumer opportunities in leisure markets may encourage leisure variety and discourage a more focused leisure style…leisure participants may instead be sampling from a growing variety of opportunities. Some participants may favor a diversity of experiences across different activities, rather than a qualitatively better experience with each repeated engagement in a single activity" (Kuentzel 2001 p353). Therefore, it may be that wildlife tourism sites go through the stages of Butler's life cycle at a greater pace, or even omit the earlier stages of development—at least from the perspective of increased specialisation. This observation is also discussed by Butler (2007) in the context of a tourism destination. Bulter (2007) contends that destinations are now progressing faster than ever through this lifecycle. While he states that it is important to identify the agents of change, the exact reasons for this acceleration are uncertain, though he hypothesises that it could be due to—*inter alia*—greater access, cheaper transportation, and improved communications and awareness.

Thus, there is inherent value in the development and clarification of the criteria used to assess specialisation. In choosing and defining these criteria it is important to recognise that specialisation as a construct should not become increasingly narrow, particularly in a dynamic leisure market. In addition the usefulness of this construct for wildlife tourism research is greatly enhanced by the employment of indicators that can be validated and repeated in a range of contexts. Lastly, it is relevant to reflect on the original application for Bryan's work, and the basis for its adoption by Duffus and Dearden, which was to assist natural resource managers and natural resource management research. Ideally therefore, the merits of each individual research application of the specialisation continuum should produce outcomes that facilitate the management of that particular natural resource.

Limits of Acceptable Change

Duffus and Dearden (1990) opine that, in the absence of the proper management interventions, the impacts on a wildlife attraction will become overwhelmingly negative throughout its touristic evolution. For the purpose of monitoring and managing the change Duffus and Dearden integrated the Limits of Acceptable Change (LAC) concept into their model. The LAC theory provides a planning framework for generating acceptable forms of use of social and natural resources. As with several other natural area management frameworks (e.g. the Visitor Impact Management Model, the Recreation Opportunity Spectrum and the Tourism Optimisation Management Model), LAC consists of series of steps that are employed to guide the management of a natural resource. LAC's viewpoint is contrary to that of the traditional goal of setting a fixed carrying capacity for an area based on a maximum tolerable level of impacts. It adopts the perspective that change is inevitable in the human use of natural areas and that the purpose of management and planning is to determine those levels of change that are acceptable. With particular reference to wildlife tourism management, LAC is implemented through the setting of explicit and achievable parameters that can be readily monitored. As stated by

Newsome, Moore, and Dowling (2002), LAC's greatest attribute is its ability to determine when enough change has occurred and when more would be detrimental.

Duffus and Dearden (1990) focus on the use of indicators of both environmental and social change by setting three LAC milestones in their framework. LAC I consists of the initial threshold that allows for a maximum number of visitors without noticeable facility development and environmental impact. LAC II occurs when there is increased human facilitation of wildlife viewing, and a decreased number of wildlife due to increased human impact. LAC III represents the point at which the maximum number of tourists can participate in an activity which can still be sustained. Beyond this point the activity is unlikely to survive, due to the overwhelming impact on the wildlife and the resultant decreased participant satisfaction.

Determining these milestones is the responsibility of managers and researchers. Measures of social indicators for LAC are reasonably achievable, especially in comparison to the biological impacts, through data collection methods such as interviews and questionnaires. However, Malcolm and Duffus (2008) question the relevance of much of the social data that has been collected to date. Although their work focuses specifically on whale watching, it is no less relevant to wildlife tourism more generally. They argue that, while social data has been collected on topics such as motivations, demographics, and education, there has been a lesser focus on the collection of data that is appropriate for management. Thus, the challenge for social scientists working in the area of wildlife tourism is to produce results that are not only academic but also pragmatic, and this is where the models such as the Duffus and Dearden's wildlife tourism framework are particularly pertinent.

For example a useful application of specialisation is conducted by Dearden, et al. (2006) through an examination of user specialisation amongst Scuba divers in Phuket, Thailand. They found that user specialisation was decreasing and that the novice participants brought with them different preferences and motivations to those of the more specialised divers. In particular, Dearden et al. (2006) argued that, for a site to extract the greatest benefit from the industry, it needs to cater for an increase in mainstream tourists but also to have services which are directed at maintaining the specialist segments which, they argue, are high yielding and create more positive

exposure. Furthermore, to conserve the natural environment, they argue for regulatory policies to restrict not only the overall numbers, but also to deter less experienced divers, who are not as discerning and are more likely to cause damage, from using areas of high environmental value.

In another study—investigating manatees as a tourist attraction in Florida, USA— Sorice, Shafer, and Ditton (2006) found that the management intervention then in place was failing to protect both the visitor experience and the wildlife species. Growth in the industry, best represented by the greater number and size of viewing vessels, had not been accompanied by greater and more effective management strategies. Collection of social data showed that crowding as well as the perceived potential for disturbance of the manatees had both arisen as major concerns, potentially leading to the site being passed over for other manatee viewing areas. Moreover, the government body responsible for the management of the manatee interaction is limited by the fact that their control diminishes greatly when the interaction occurs outside the sanctuary zone, which is a common occurrence. Drawing from Duffus and Dearden's framework, Sorice et al. (2006) argued, given the current limitations placed on managers, the situation can go to either extreme. That is either a greater reliance on tour operators to self-regulate, or alternatively for greater legal intervention to apply current management strategies to all those areas frequented by manatees and people. Sorice et al. (2006) affirm, considering that some operators do not have conservation as their core objective, and that over intrusion by management bodies may irritate tour operators, a balance needs to be struck between operator and governmental management practices.

In a time sensitive study, Higham (1998) discovered that Duffus and Dearden's wildlife tourism framework predicted the site evolution for tourist viewing of an albatross colony in New Zealand. He found that looking at a range of biological and social data sets, some up to two decades long, allowed for an accurate picture of the processes to be attained. Higham (1998) discovered that, with an absence of adequate visitor management coupled to an increase in total numbers and a shift to less environmentally aware generalist tourists, there were detrimental impacts on both the focal species and the tourist experience. However, determining these impacts was only possible if they were viewed over a significant time span.

Biological indicators may be more enigmatic than social markers but, like social data, changes in focal species and the surrounding environment are just as conducive to concealment in the short-term. Extreme negative impacts on the focal species such as death and injury, are reasonably amenable to detection, but subtle impacts that manifest over time usually go undetected (Sorice, Shafer, and Scott 2003; Watkins 1986). Higham and Bjeder (2008) discuss the implications of a recent study of the negative impacts on the target species from dolphin viewing boats in Monkey Mia, Western Australia. They demonstrated the value of viewing impacts on the appropriate temporal scale. A comparison of data on dolphin density collected over a 15 year time frame showed that, since the introduction of a second wildlife tour operator, there had been a statistically significant decrease in dolphin density in the tourism interaction zone while the adjacent control site had experienced an increase. It was determined that, at the current frequency of interaction, more than one tour operator was not sustainable. As a consequence the number of operators was reduced by half by the Western Australian Government. Higham and Bejder (2008) contend that this was a milestone event in the management of wildlife tourism since it was a move from simple acceptance of the Precautionary Principle towards objective science.

It is clear that measuring disturbance of the focal species and the surrounding environment can be a difficult task and studies that do this accurately are the exception. Furthermore, extrapolation from one study to another has negligible value given the situation specific nature of the interactions between tourists and wildlife species in their surrounding environments (Higham 1998). Although formulating a general definition of disturbance would only have limited application, one approach that fits well with Duffus and Dearden's LAC milestones is that of the disturbance categories formulated by Liddle (1997). Acknowledging that every species, and even sub-species, can react differently to the same tourism pressures, and that various authors define disturbance in different ways, Liddle developed three simplified categories. Disturbance Type 1, the most minimal of the three, exists when the animal is aware of the tourist but there is no direct contact and only a short interruption of their tranquility. During this interruption the animal may respond positively or negatively to the stimuli. Disturbance Type 1 is the likely match for

LAC I where tourism can persist with only minimal impact on the target species. Disturbance Type 2 is a more likely example of human wildlife interaction and involves direct interference with the animal and, in particular, the modification of its natural environment. As with Disturbance Type 1 and LAC I, Disturbance Type 2 fits with LAC II. Disturbance Type 3 is the most extreme of the three categories and takes place when there is direct and damaging contact with the animal that causes harm or death. While Liddle states that this is most relevant to consumptive forms of wildlife tourism (e.g. hunting), he also notes there is potential for this to happen unintentionally during non-consumptive tourism. Beyond LAC III Disturbance Type 3 is likely to be common, since it is unlikely to be sustainable.

Limits of Acceptable Change is therefore an effective concept for inclusion in Duffus and Dearden's wildlife tourism framework. There are methods that can be extrapolated from the various wildlife tourism activities, but the situation specific nature of each activity also needs consideration. LAC does provide for the inclusion of relevant indicators of both social and environmental change to be set. Nonetheless, it is clear that wildlife tourism managers need to be aware of the potential changes that occur subtly but significantly as a wildlife tourism site develops.

From Here…

Since there has been an accumulation of research into various aspects of wildlife tourism for nearly two decades, there is now a sufficient database from which to contextualise wildlife tourism situations through the application of theory such as that offered by Duffus and Dearden. Understanding wildlife tourism from a broader temporal perspective will offer greater insight than that which is available in the form of single, once off case studies. Duffus and Dearden have provided a sound theoretical base from which to examine wildlife tourism, and this is continuing to gain both verification and momentum. Nonetheless there is definite scope for further application and development of their concept.

As Butler (2007) has reflected, TALC, in its original form, does not adequately identify the causative agents driving the changes that shape the trajectory of the lifecycle particularly in the decline stage of the model. He argues that, despite the widespread acknowledgement of the applicability of TALC, there has been relatively little intervention to manage tourist destination change in a way that would lead to more desirable outcomes. Given its similarities to TALC, it could be argued that the Duffus and Dearden (1990) framework seeks specifically to achieve this ideal within a wildlife tourism setting. And, although it already extends beyond TALC by integrating it with two other models, there is genuine capacity for its further improvement.

Whale shark tourism at Ningaloo Marine Park presents such an opportunity to apply the framework to a wildlife tourism industry for both affirmation and critique. As an iconic tourism destination in an isolated region it is an ideal location for a distinctive wildlife tourism industry. Since its inception the whale shark tourism industry has been relatively well documented in a variety of ways thus allowing for comparative analyses with the current situation. More importantly research was undertaken in 1995 and 1996 into the experiential, managerial, and expenditure characteristics of the whale shark tourist industry. This material was published in a variety of journals (Birtles, Cuthill, Valentine, and Davis 1995; Davis 1996; Davis 1998; Davis, Banks, Birtles, and Valentine 1995; Davis, Banks, Birtles, Valentine, and Cuthill 1997; Davis and Tisdell 1996; Davis and Tisdell 1998) and this has provided a sound basis for the evaluation of the dynamics of the industry over the intervening decade. In addition to directly documenting these changes, this thesis will explore other aspects of change that are believed to be pertinent to the sustainable management of the whale shark tourism industry at Ningaloo and to the further development of the Duffus and Dearden model.

CHAPTER THREE

SETTING THE SCENE

Ningaloo Reef and Associated Tourism Development

The Geography and Biology of Ningaloo Reef

Ningaloo Reef, which is located 1150km north of Perth, is one of the longest fringing reefs in the world. It extends for 300km along Western Australia's North West Cape from 21°40'S to 23°34'S, and lies between 100 metres and three kilometres from the shoreline (Figure 3.1, 3.2) (CALM 2005). The Marine Park, which was designated in 1987 covers an area of 4287km^2. Ningaloo's high environmental and cultural significance has merited its listing on the Register of the National Estate and it is currently being considered for World Heritage nomination (CALM 2004a).

Figure 3.1: An aerial view of the northern end of Ningaloo Reef showing its close proximity to the shore

Source: Matthias Schneider
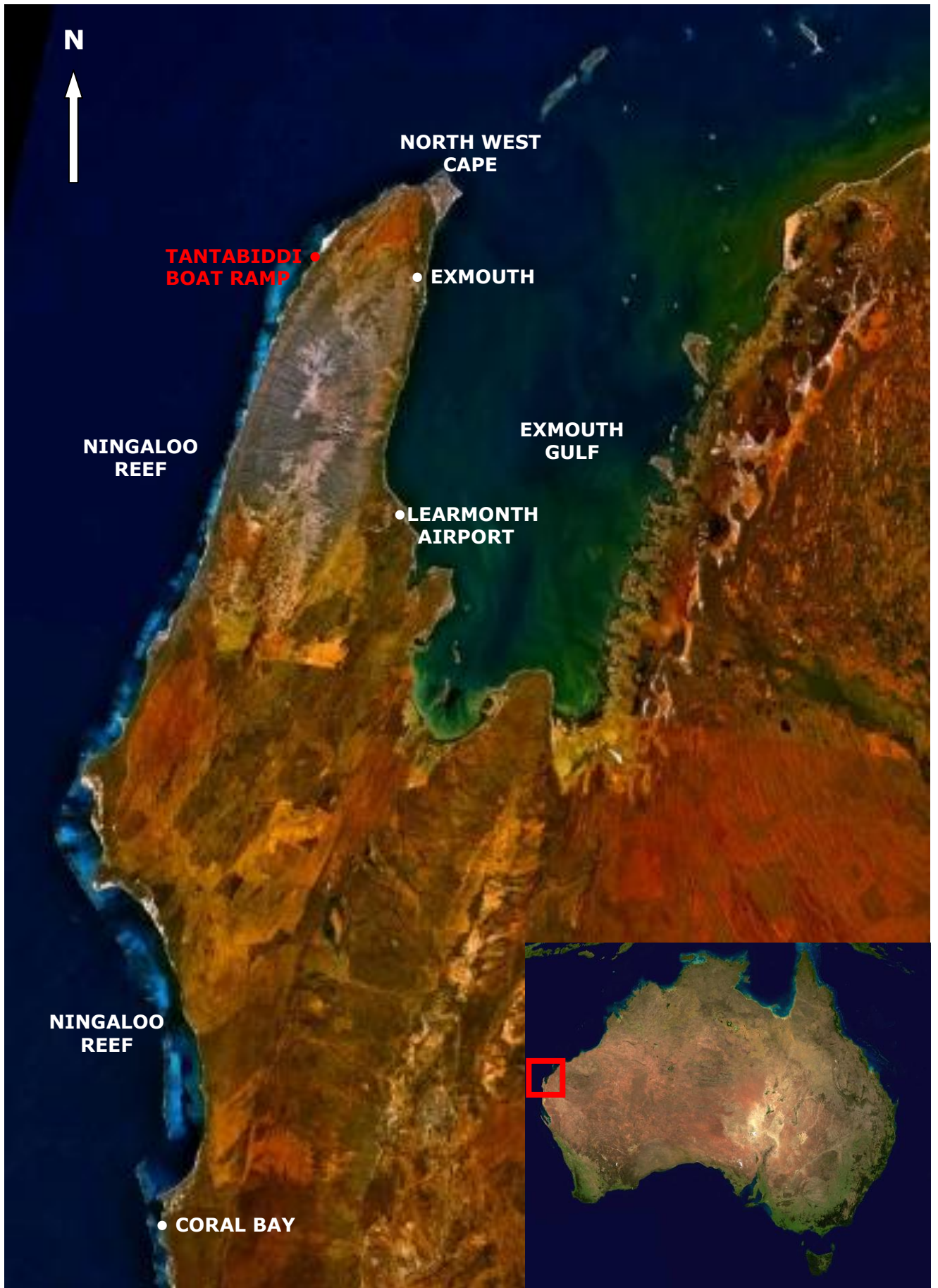
Figure 3.2: Satellite image of the North West Cape

Source: *Modified from NASA World Wind Version 1.3*

Ningaloo Reef has a biologically diverse ecosystem with over 200 coral, 600 mollusc and 500 fish species—biodiversity levels equivalent to those of the Great Barrier Reef at similar latitudes (CALM 2005). Furthermore, many larger charismatic animal species of high conservation value migrate to the Marine Park. Four species of turtle, dugongs, manta rays, 20 species of whale and dolphin, and whale sharks spend time in the Marine Park (CALM 2005).

Ningaloo Reef is strongly influenced by the Leeuwin Current, which flows down the Western coast of Australia, bringing warmer water from the tropics (Hatcher 1991). Despite its location across the Tropic of Capricorn, the entire reef supports tropical species. The Leeuwin Current also marginally increases the rainfall in the North West Cape, which has an arid-tropical climate characterised by hot summers, commonly exceeding 40 degrees centigrade, a low summer rainfall and warm dry winter months.

Social and Economic History of the North West Cape

Exmouth and Coral Bay function as the gateways to the Marine Park. Exmouth is a small town, with a population of 2400 permanent residents (Shire of Exmouth 2008a) located at the north east end of the North West Cape (Figure 3.2). Coral Bay, located on the west coast, is a small coastal holiday town with few permanent residents 150km to the south of Exmouth (Figure 3.2).

The North West Cape has a diverse and colourful history. The area is now covered by a registered Native Title Claim (the 'Gnulli' Claim) representing people who identify as descendants of the 'Baiyungu' and 'Talangi' Aboriginal peoples (National Native Title Tribunal 2005). Anthropological and historical reports dating from 1851 onward describe the presence of canoes, rafts, and fish traps—and evidence of Aboriginal consumption of turtle, dugong, fish and shellfish along the coastline (National Native Title Tribunal 2002).

The Dutch made a landfall nearby at Dirk Hartog island in the early Seventeenth century and 'Europeans' have been visiting the area regularly since the 1790s when

American whalers targeted the sperm and humpback whales found in the region (Commonwealth of Australia 2002). By the late Nineteenth century the area had been opened up to pastoralism, with pastoral leases being taken up across the whole of the North West Cape. At the same time pearling operations commenced in the Exmouth Gulf (Shire of Exmouth 2008b). During World War II the Royal Australian Air Force operated from a base at Learmonth (15km south of Exmouth). Throughout the 1950s and 1960s whale and turtle hunting as well as fishing were undertaken on a commercial basis in the region (CALM 2005).

In 1963 the Harold E. Holt United States Naval Communications base was established on the tip of the North West Cape, to communicate with submarines using low frequency radio waves. As a result, the town of Exmouth was designated a year later to house and service the American Naval Personnel. In 1992 the Royal Australian Navy took over the facility's administration, but they deployed only a fraction of the former personnel numbers at the base. The withdrawal of the United States Navy had a considerable negative impact on the local economy, but fortunately around this time tourism began to emerge as the area's new economic foundation (Wood and Dowling 2002). In addition to tourism, the North West Cape's economy is based around commercial fishing and the pastoral industry.

Tourism on the Ningaloo Coast

The Ningaloo coast is an increasingly popular tourist destination for both local and international tourists. The climate is an important seasonal attraction, with the majority of people visiting during the southern hemisphere winter to experience the region's fine warm weather and natural environment. In 2003, visitor direct expenditure in the area was valued at $138 million (Carlsen and Wood, 2004), indicating that tourism brings more revenue to the region than the second largest industry, fishing. Using modified figures from Tourism Research Australia, Carlsen and Wood (2004) calculated total visitation to the Ningaloo coast in 2005 at 203,508 people. Although reliable statistics are not available for the early 1990s, researchers and the local tourist industry generally consider that visitor numbers have increased markedly since the early 1990s. Over this period, there has been a major change in

the nature of tourism in the region. In 1989-91, fishing was the most popular activity on the Ningaloo coast for 70 percent of visitors (Wood and Dowling, 2002), while in 2003 it was most popular for only 10 percent of visitors (Carlsen and Wood, 2004). In a related trend, the origin of visitors has changed from being overwhelmingly from Western Australia to now include a high proportion from other countries and, also, from other states of Australia (see Table 3.1).

Table 3.1: Place of origin of tourists to the Ningaloo Coast

Place of Origin	1989-1991 (%)	1997-2002 (%)	2003 (%)
Western Australia	85	42	48
Interstate	8	15	13
International	4	43	39

Sources: (Carlsen and Wood, 2004; Wood and Dowling, 2002)

Carlsen and Wood's (2004) analysis of tourist expenditure patterns in the area found that the expenditure levels of visitors correlated positively with participation in high cost activities, and correlated negatively with age. Visitor expenditure also correlated positively with increasingly expensive accommodation categories and with origin (international visitors spent more than interstate visitors, who spent more than locals). Accommodation has been and continues to be dominated by caravan parks and camp grounds. There are six caravan parks in the region compared with six hotels/motels, three sets of holiday units/apartments and six backpacker hostels (two of which are located in caravan parks). However, hotel developers are showing an increasing interest in the region. A Novotel was recently built in Exmouth and there were plans to build a Hilton in Coral Bay, a small resort town located close to the south of Ningaloo Reef, although Hilton has recently withdrawn from this arrangement. Occupancy rates are not available for all accommodation types due to the small number of providers and concerns about commercial sensitivity. Figures are available for caravan parks, which had an occupancy rate of under 25 percent in February 2006, and over 80 percent in July and August 2006 (ABS, 2006). Figures for the Coral Coast tourism region (which includes the Ningaloo coast) indicate that hotels, motels and serviced apartments have their lowest occupancy rates in February and their highest in July and September (the months that include school holidays) (ABS, 2006).

The Ningaloo marine environment has long been recognised for its natural assets. It was originally gazetted as a Marine Park in 1987, at both State and Commonwealth levels. The Marine Park consists of both State and Commonwealth jurisdictions, with State waters extending from the shore to three nautical miles offshore, and the Commonwealth region covering approximately the same area seaward of the State waters (Figure 3.3). In 2004, the Western Australian Government extended park boundaries 60km southwards, encompassing areas of the reef previously subject to petroleum exploration permits.
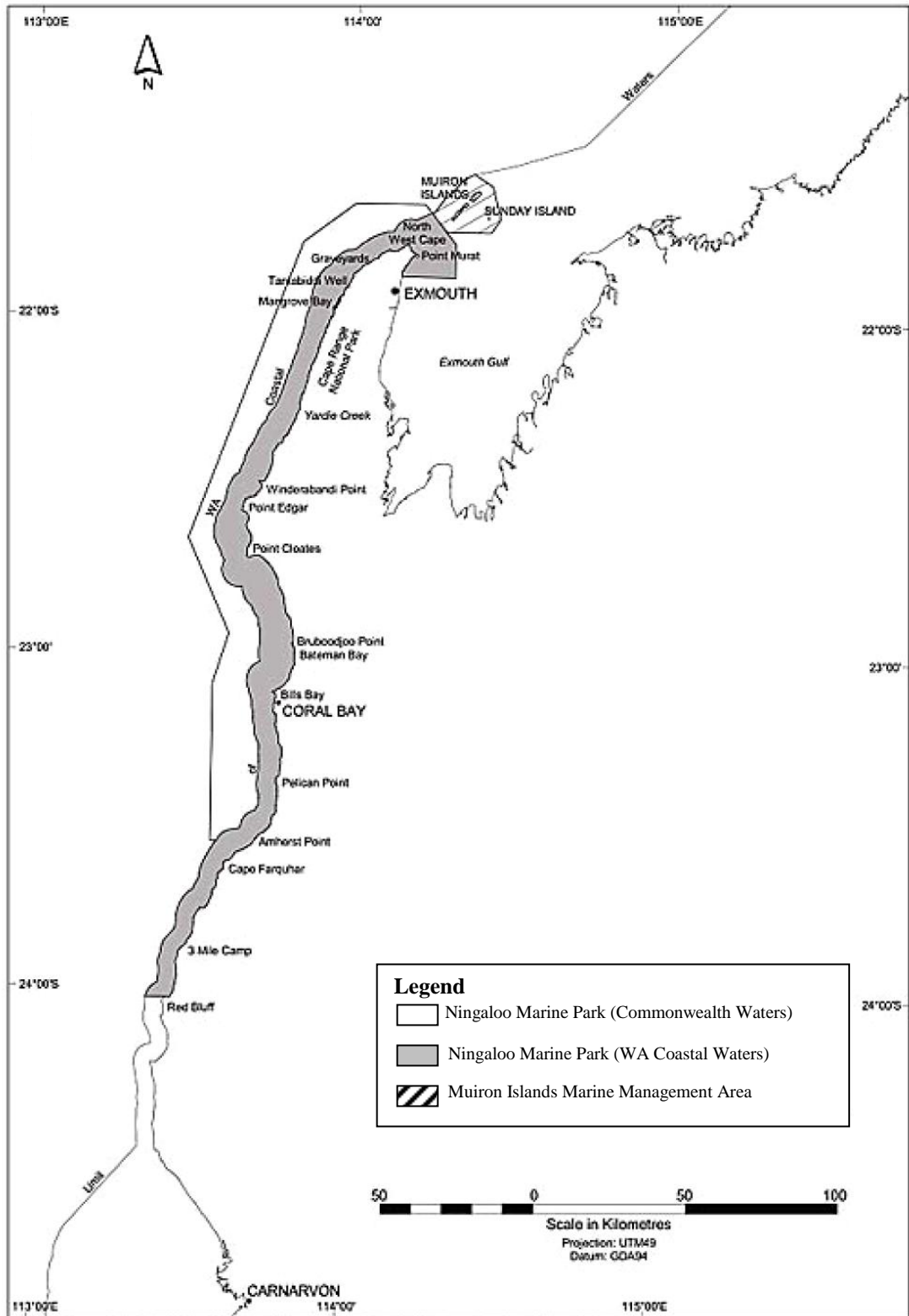
Figure 3.3: Map of the North West Cape indicating State and Commonwealth Ningaloo Marine Park boundaries

Source: modified from (CALM 2005 p14)

The State and Commonwealth areas of the Marine Park are managed as a single entity. Environment Australia (Commonwealth Department of Environment and Heritage), the Western Australian Department of Fisheries and the Western Australian Department of Environment and Conservation (DEC) are responsible for management of the Marine Park, with the latter pair providing the 'hands-on' management. Specifically, section 13B(1) of the *Conservation and Land Management Act 1984* (WA) states that Marine Parks shall be managed by DEC for the purpose of:

> …allowing only that level of recreational and commercial activity which is consistent with the proper conservation and restoration of the natural environment, the protection of indigenous flora and fauna and the preservation of any feature of archaeological, historic or scientific interest.

Whale Sharks and Whale Shark Tourism

Whale Shark Biology

Deceiving both by name and by their whale-like form, whale sharks (*Rhincodon typus*) belong to the Class of fish, *Elasmobranchii*, which includes sharks, skates and rays. They are in fact the largest fish in the sea. Their exact maximum length and weight is uncertain but conservative estimates place them at 12 metres long and weighing 10 tonnes (Compagno 2001). Whale sharks are a highly migratory species with a cosmopolitan distribution and they can be found in all tropical and warm-temperate seas (Colman 1997a) (Figure 3.4). In Australia, they occur mainly off the Northern Territory, Queensland, and northern Western Australia coasts, with infrequent sightings in the southern states (Last and Stevens 1994).
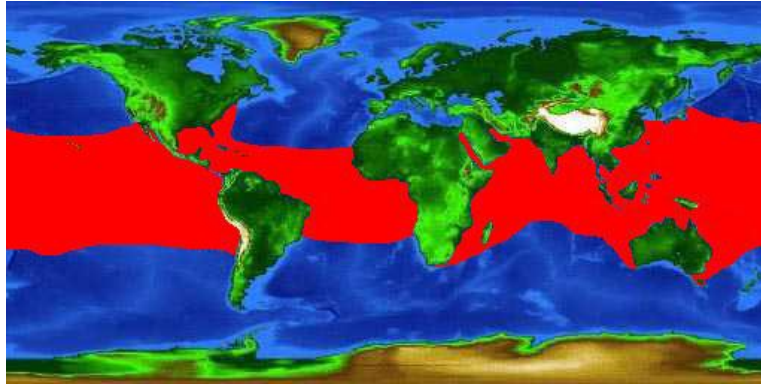
Figure 3.4: Global distribution of whale sharks, indicated in red

Source: *(Florida Museum of Natural History 2005)*

While they are predominantly solitary animals, whale sharks sometimes gather in aggregations of four to five (Beckley, Cliff, Smale, and Compagno 1997) and occasionally in large schools of up to a hundred (Compagno 2001). They are characterised by a streamlined body shape with a broad flattened head and a near terminal mouth (Last and Stevens 1994). Whale sharks can be distinguished from other sharks by their chequerboard pattern of light spots and stripes on a dark dorsal surface and their light underside (Compagno 2001, Figure 3.5).
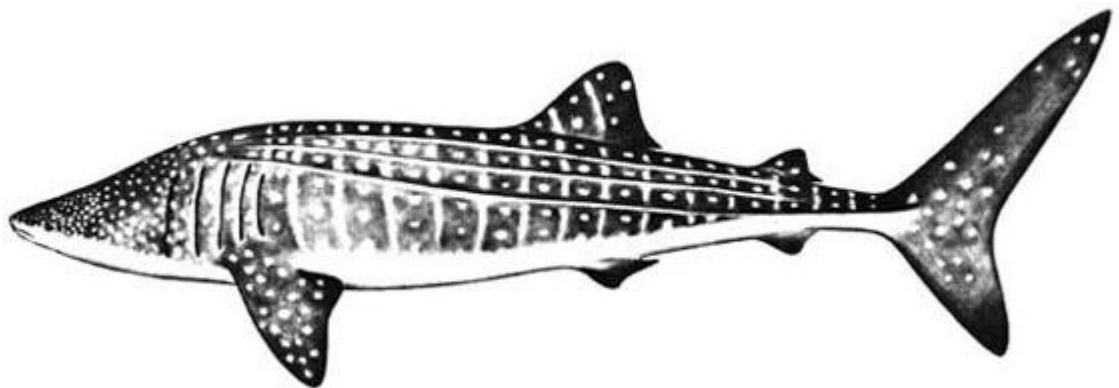
Figure 3.5: Diagram of a whale shark

Source: *(Florida Museum of Natural History 2005)*

Whale sharks are an epipalegic fish, meaning that they spend the majority of their time close to the surface. They use modified gills to filter their food from the water column using a suction-filter mechanism (Compagno 2001). Whale sharks feed during the night time, and their diet includes a variety of planktonic and nektonic prey, such as small schooling fish and crustaceans (Last and Stevens 1994). It is

thought that whale sharks migrate in response to localised blooms of planktonic organisms and changes in water temperatures (Compagno 2001).

Whale Shark Conservation and Impacts

Despite being the focus of several recent fishing initiatives whale sharks are also appreciated for their conservation value. They have been on the World Conservation Union's *Red List of Threatened Species* since 1990 and are currently classified as 'Vulnerable' (IUCN 2006). In addition, whale sharks became legally protected in 2002 under the Convention on International Trade of Endangered Species Appendix II, meaning that there are trade limitations on this species for all nations that are signatories to the convention. Appendix II is reserved for species that are not currently facing extinction but have the potential to be so threatened in the future if trade is not controlled. According to WildAid (2004), the attainment of this classification for whale sharks was assisted by the argument that their value for tourism greatly outweighed their value as a fishing resource. Furthermore, whale sharks are a protected species in many nations' waters. However, given their migratory behaviour, the various tiers of protection afford whale sharks little security if they are still fished in other areas.

Taiwan, the largest consumer of whale shark meat, put an end to the last large scale, legal whale shark fishing industry in 2007. Over the last several years Taiwan's fishing industry had been reducing their quotas in anticipation of this ban, with 30 taken in 2007 down from 60 the year before. However, prior to this planned reduction, figures on catches obtained for a report into whale shark management and trade in Taiwan demonstrated that, from 1997 to 2001, the number of sharks caught had dropped considerably from 272 to 113 (Chen and Phipps 2002). Chen and Phipps (2002) stated that this could be due to discrepancies in the reporting of catches, as opposed to an actual reduction in the number of sharks caught. However, in support of the latter hypothesis, all of the sharks caught in 2001 were relatively small, the largest being only seven metres in length, an outcome typical of pressures from over fishing. Furthermore, other whale shark fisheries have also experienced drops in catches in recent years despite increased efforts and greater demand for

whale shark meat (Watts 2001). These include India which dramatically increased its catch during the late 1990s and into 2000s taking up to 1000 sharks annually (Watts 2001).

As mentioned, whale shark in Taiwan is largely caught for its meat, known locally as 'tofu shark' given its texture and taste. The market value for whale shark meat in Taiwan, which accounts for around 45 percent of its body weight, was approximately US$11.80/kg (Chen and Phipps 2002). There is also evidence that Taiwan is not the only market for whale shark meat. Alava (2002) claims that Japan, Singapore, and Hong Kong also import whale shark meat to varying degrees. There are also reports of whale shark meat being sent to Europe, with one 2000kg shipment sent from Taiwan to Spain in 2003 (Clark 2004). Furthermore, recent anecdotal reports suggest that China should be added to this list (Figure 3.6). This is consistent with Clark's (2004) finding that general frozen shark meat imports to mainland China have increased 10 fold since 1998.

Although whale shark meat constitutes its greatest product in weight, whale shark fins are also known to be highly valuable and constitute another considerable export. A report detailing the characteristics of the shark fin trade in mainland China and Hong Kong concluded that the global effectiveness of the regulation of trade in shark fin is highly dependent on success in these regions (Clark 2004). Hong Kong has traditionally, and is still largely, the major importer of shark fins, including those from whale sharks, accounting for around 50 percent of global trade (Clark 2004). Due to the greater economic liberalisation of mainland China, there is also now a growing trade in shark fin independent of Hong Kong consumption (Clark 2004). Given their large size, single whale shark fins command high prices and are known to be worth up to US$57,000 (Clark 2004).

Figure 3.6: A whale shark caught in 2008 off southern China

Source: (The News CN 2008)

The explanation for the fishing of whale sharks is obviously central to their commercial value for consumption, more so than for any traditional or cultural purpose. There have been extravagant claims for the prices of shark fin soup in restaurants and the prices paid per kilogram for shark meat, equivalent to tens of thousands of dollars for a single shark. What needs to be noted, however, in addition to the obvious conservation concerns, is that the recorded prices paid to fishers are meagre in comparison. In India, fishers were paid less than US$4000 per shark, and Taiwanese fishers were receiving only US 10 cents a kilogram (Watts 2001). In the most recent reported catch, in China, an eight metre whale shark was reported to have been sold for only US$3000. This suggests that there is minimal economic benefit, on a regional/local scale, to be gained through whale shark fishing.

Regardless of the cessation of the major legal whale shark fisheries, the very slow replacement rate of whale sharks makes it highly possible that the large numbers taken by these fisheries will have long term ramifications. To put this into context, India at the peak was taking approximately 1000 sharks annually. This catch is twice the most generous calculations of the population at Ningaloo Marine Park (Meekan, Bradshaw, Press, Mclean, Richards, Quasnichka, and Taylor 2006). Furthermore, recent genetic testing of whale sharks has confirmed, something that

was only assumed until now, namely that there is a high level of interbreeding between the various regional populations (Castro, Stewart, Wilson, Hueter, Meekan, Motta, Bowen, and Karl, 2007). As a result, besides decreasing yields being experienced by localised whale shark fisheries, there is additional evidence that species numbers may have been negatively influenced elsewhere. For instance, in Phuket, Thailand, a destination where whale sharks were listed by divers as third most important reason for visiting the region (Bennett, Dearden, and Rollins 2003), Theberge and Dearden (2006) found that there had been a 98 percent drop in sightings of whale sharks from 1998-2001. This is despite no obvious whale shark fisheries in the region.

While many of the above mentioned figures provide solid points of reference the numbers quoted in these reports should be viewed as very conservative since outlawing fishing is by no measure a panacea for conservation. For instance, it was found in the Philippines (Alva, 2002) that, despite a ban on whale shark poaching, this was still occurring to some extent. Moreover, details of catches in Taiwan identified by Chen and Phipps (2002) estimated that up to 40 percent of the fishing yield, including whale sharks, in some Taiwanese regions is traded to China in the open seas, and consequently is not recorded or logged as an official catch. Conversely, of the meat for sale in Taiwan it is purported that over half is not sourced locally in Taiwanese waters. Not surprisingly, there were large discrepancies found between reported catches and imports, and thus in the total content of whale shark meat available for sale (Chen and Phipps 2002).

In summary, whale sharks have been the subject of seemingly unsustainable fishery practices. Simultaneously an alternative and more environmentally responsible economic use of whale sharks has developed. Whale shark tourism first started at Ningaloo Reef in Western Australia, and has since diffused to at least 20 other locations around the world including: the Seychelles; several locations in Mexico; the Philippines; the Maldives; Belize; Honduras; Mozambique; Kenya; and Djibouti. It is estimated 100,000 people participate in whale shark tourism activities around the world annually, paying up to US$350 for a single encounter, and in turn generating millions of dollars for local economies. Furthermore, some of these tourism industries have developed at the expense of consumptive uses. As stated by Topelko

and Dearden (2005 p124) "Knowledge of the economic value of shark watching can be used to gain public support for the protection of sharks through the establishment of marine reserves and/or restrictions placed on the fishing industry". For example, local people in Donsol, the Philippines had until recently hunted whale sharks. However, the success of whale shark tourism has since seen the species become fully protected with complete support from the local communities.

Currently there are many destinations reaping the economic benefits derived from whale shark tourism. However, the total potential for greater involvement through new whale shark tourism destinations is unknown. Places such as Taiwan and India, which have high densities of sharks, are potential additions to this list. Moreover, there are likely to be many undiscovered localities, given the enigmatic state of the species. Most of the new tourism destinations have been set up at locations where whale sharks are present on a seasonal basis at high densities. Therefore, it is highly likely that, with greater identification of whale shark habitats there is considerable potential to create additional whale shark tourism industries. Furthermore, whale sharks are a highly important species with regard to conservation not only because they are the largest fish in the sea and are susceptible to over-fishing, but also because of their ability to attract human interest and thereby to act as a flagship species for the conservation of the wider natural marine environment. Thus it is extremely important that momentum is maintained to halt any future developments in both the legal and illegal fishing of whale sharks.

Tourism Impacts

According to Beckley, Cliff, Smale, and Compagno (1997), Colman (1997a) and Lent (1995) there is a great deal of literature published on the whale shark. However, they state that most is unoriginal and lacking in substance, and that there is still a large gap in our knowledge of this species. Norman (2002) asserts that tourism has the potential to cause a number of possible negative impacts on whale sharks particularly if repeated human disturbance occurs. These include direct impacts, such as disruption of normal whale shark behaviour and physical contact by vessels and swimmers and indirect impacts, such as induced changes to migratory pathways in

order to avoid tourist interactions, which could displace the whale sharks from their breeding and feeding areas.

Two independent studies have been conducted into the immediate behavioural reactions of whale sharks to tourism. The first was undertaken by Norman (1999) at Ningaloo Reef from 1995-1997. A more recent study was undertaken by Quiros (2005) at Donsol in the Philippines in 2004 and 2005. The studies showed that whale sharks reacted to snorkellers and vessels by diving away, porpoising (i.e. diving up and down), eye rolling, banking (turning to expose the thick skin of the dorsal surface as a shield) and shuddering. The following were found to be variables that influenced the reactions of whale sharks. Most were identified in both studies:

- Proximity of the snorkeller or the vessel to the whale shark;
- Flash photography;
- Touching the whale shark;
- Diving around the whale shark, in particular near its head;
- Obstruction of the whale shark's path by a snorkeller;
- Use of Scuba equipment.

However, whale sharks are also known to display some of these reactions in the absence of snorkellers and vessels (Gunn, Stevens, Davis, and Norman 1999; Stevens, Norman, Gunn, and Davis 1998). Consequently, Colman (1997a), Norman (1999), Stevens et al. (1998), and Taylor (1997) all argue that the extent to and the manner in which tourism influences whale shark behaviour cannot be conclusively determined without more information about their natural behaviour patterns. Nevertheless, based on current knowledge, it is thought that whale shark tourism, if conducted appropriately, can be environmentally sustainable (Martin 2005; Norman 2004). In support, it is known that some of the whale sharks exposed to snorkellers have frequented Ningaloo for consecutive years (Stevens, et al. 1998). Notwithstanding, given the level of scientific uncertainty, Norman (2004) considers that the Precautionary Principle should be adopted for whale shark tourism in order to avoid any negative impacts.

Conversely, there are a number of positive spin-offs from whale shark tourism for the species, besides, as mentioned above, whale shark tourism being a preferable alternative to whale shark consumption. Compagno (2001) states that the tourist industry has led to a worldwide increase in scientific interest in whale sharks. The Seychelles is one location where whale shark tourism is used to provide revenue for research programmes. In general, it would be expected that the benefits that are applicable to other wildlife tourism situations, such as increased awareness of the species and socioeconomic benefits to local communities, would also occur.

Whale Sharks at Ningaloo Marine Park

As with the species in general, the presence of whale sharks at Ningaloo was, until recently, largely an unknown quantity. Not until the efforts during the 1980s of Geoff Taylor, a General Practitioner committed to understanding this rare occurrence bore results, was it widely known that whale sharks frequented the Marine Park. It has since been confirmed that the high productivity in the marine environment at Ningaloo Reef during the Autumn months, in particular the abundance of krill resulting from nutrient rich cold water upwelling, is the reason for the annual migration of whale sharks to this area (Wilson, Pauly, and Meekan 2002). Whale sharks are regularly found close to the outer side of the Reef in less than 50 metres of water and swimming in a north-south direction (Gunn et al.1999). It is generally agreed that the whale sharks present at Ningaloo are immature males and that the majority are relatively small by whale shark standards. As stated by Chapman (2002) the average length of whale sharks at Ningaloo is six to seven metres, although sizes can vary considerably.

However, more recent research indicates that this situation could be dynamic. Bradshaw, Fitzpatrick, Steinberg, Brook, and Meekan (2008), examined whale shark tour operator log books for ecological indicators of whale sharks. They discovered that population density had decreased by approximately 40 percent over the last decade. In addition to determining whale shark density, Bradshaw et al. (2008) discovered that whale shark length had decreased substantially, with average lengths being 7.0 metres in 1995 decreasing down to 5.4 metres in 2004. They hypothesised

that these changes in the whale shark population were probably a result of fishing pressures beyond the Australian borders.

Holmberg, Norman, and Arzoumanian (2009) confirmed similar findings on whale shark length, but found abundance, using a mark-recapture method via photograph identification, to have slightly increased over a decade long timeframe. This was a finding from a follow up to an earlier study showing that abundance had remained steady (Holmberg, Norman, and Arzoumanian 2008). Similarly contentious, Holmberg et al. (2009) found the number of individual whale sharks to be between 107 and 159. This was significantly less than the 300 to 500 individuals identified by Meekan et al. (2006) in an earlier study also using photographic identification also over a similar timeframe. Thus greater research efforts are needed before widely accepted conclusions can be definitively drawn.

The Whale Shark Tourism Industry

As mentioned above there are only a handful of places around the world where whale sharks occur consistently and in sufficient numbers on which to base a tourism industry. Ningaloo Marine Park is the most recognised and developed site internationally. Whale shark tours have been operating out of Exmouth since 1987, but it was not until their popularity grew as a result of increased publicity that the need for regulation became apparent. Licences were issued to operators in 1993, thus establishing a regulated tour industry (Colman 1997b). Originally 13 licences were granted to all the pre-existing whale shark tour operators (Colman 1997b). This number soon increased to 15, with 12 at Exmouth and three at Coral Bay (CALM 2004). In the 2009 season the number of licences was set at 14, 11 at Exmouth and three at Coral Bay. These licenses are valid for a period of five years with the possibility of renewal.

Interest in the whale shark tours has continued to grow since 1993, with the number of people participating in the tours increasing fivefold to 5000 visitors in 2003 (Figure 3.7) during the official DEC whale shark season of April and May (CALM, 2005; Colman, 1997b). However, whale shark tours have been known to run at any

time from March to August and total visitor numbers are therefore likely to be considerably greater and in some seasons are possibly double those collected officially. The timing of the whale shark season complements and extends the peak tourist season, which runs from June to October. Furthermore, the effect of whale sharks on the tourism industry in Exmouth extends beyond the whale shark season since they act as a tourism icon assisting in attracting tourists throughout the year (Wood and Glasson, 2006).
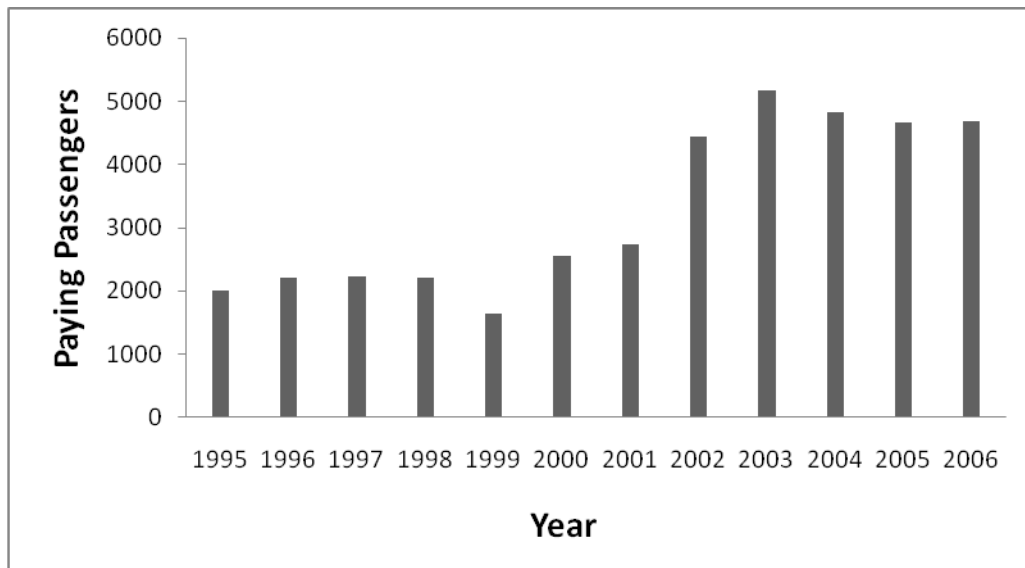
Figure 3.7: Participant numbers during the official DEC whale shark season 1995-2006

Source:(Wilson, Mau, and Hughes 2006)

Management and Legislation

There are two tiers of legislation protecting whale sharks while they are in Australian waters. The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (Cth.) provides protection for whale sharks. Concurrently, an indefinite closed season for whale shark viewing is declared under Western Australian's *Wildlife and Conservation Act 1950* (WA) and the *Fish Resources Management Act 1994* (WA). In addition, the *Conservation and Land Management Act 1984* (WA) addresses the issues of licences and conditions of use for commercial tour operators.

Management of the whale sharks at Ningaloo involves both the Department of Environment and Conservation (DEC) and the Department of Fisheries. However, it is DEC that regulates the tourist interactions. Surveillance of the whale shark interaction is undertaken on a regular basis by DEC during the whale shark season (Colman 1997b). Using a combination of planes, boats and covert officers, DEC are able to check that regulations are being followed by the operators and the tourists.

The *Management Plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015* states that the whale sharks and their associated tourism activities should be managed by DEC with the objective "(t)o ensure whale sharks migrating through the reserves are not disturbed by boating and interaction activities" (CALM 2005 p51). In particular, DEC has several specific goals in relation to management of whale shark interactions in marine reserves:

1. to conserve whale shark populations by ensuring that individual sharks, or the group as a whole, are not being subjected to an unacceptable level of disturbance;
2. to facilitate the development of ecologically sustainable whale shark tourism in marine reserves;
3. to facilitate safe interaction between people and whale sharks by allowing reasonable access within an 'appropriate duty of care';
4. to raise public awareness and appreciation of whale sharks and broader marine conservation issues;
5. to develop and implement a management framework that provides equitable opportunities for commercial operators to deliver a quality experience;
6. to ensure that whale shark interaction does not adversely impact on other values and users of marine reserves;
7. to recoup the costs of managing the interaction, whenever possible and appropriate, from the commercial operators, according to the 'user pays' principle. (CALM 2004 p1)

Since 1994 DEC has raised revenue from the whale shark operators through a management levy imposed on the passengers, which is collected during the official season. DEC charges $25.00 per adult and $12.50 per child taken on a whale shark

tour. Passengers are made aware of this extra charge through the provision of a souvenir 'Experience Pass' (Figure 3.8) as recognition of their swimming with the whale sharks and it is made clear that the levy is used for whale shark management and research.
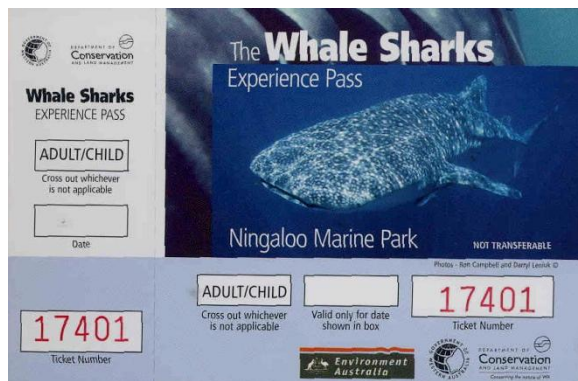
a.   b.

Figure 3.8: The Whale Sharks Experience Pass 2005, front (a) and back (b)

Source: CALM Whale Sharks Experience Pass

Licenced operators are required by DEC to keep records of interactions with whale sharks (Colman 1997b). These records collect data on aspects of the interaction, including the number of swimmers per contact; location and duration of the encounter; and the number of paying passengers. Biological information on the whale sharks such as sex, length, behaviour, and distinguishing features of the whale sharks is also collected. Previously the information was collected via handwritten log sheets but as of 2009 electronic monitoring systems have been implemented, helping to streamline this process. This data provides a good source of information that enables both practices in the industry and biological information on whale sharks to be reviewed regularly (see Chapman 2002).

The Code of Conduct

All situations that involve interactions between humans and wildlife create the potential for harm to both parties. The *Whale Shark Code of Conduct* was developed by DEC with input from the charter industry as a means of mitigating any negative

impacts from the interaction (Colman 1997b). It was based on other established cetacean swim-with programmes and was first implemented in 1995. Built into the licence conditions and the *Wildlife Conservation Notice 1995*, the Code regulates a number of the negative variables involved with interaction, such as riding and touching the whale sharks, many of which were common practice before the industry was regulated (Clark 1992). Breaches of the Code can incur fines of up to $10,000 for passengers and the loss of a licence for an operator. The Code of Conduct at Ningaloo Marine Park has served as the framework for the control of whale shark interactions at several other places around the world where whale shark tourism takes place, including the Seychelles and the Philippines.

The following behaviours are prohibited for snorkellers during the whale shark interaction (Figure 3.9):

- Attempting to touch or ride on a whale shark;
- Restricting the normal movement or behaviour of the shark;
- Approaching closer than three metres from the head or body and four metres from the tail;
- Undertaking flash photography;
- Using motorised propulsion aids and Scuba diving equipment;
- Exceeding 10 people in the water at any one time around the whale shark.
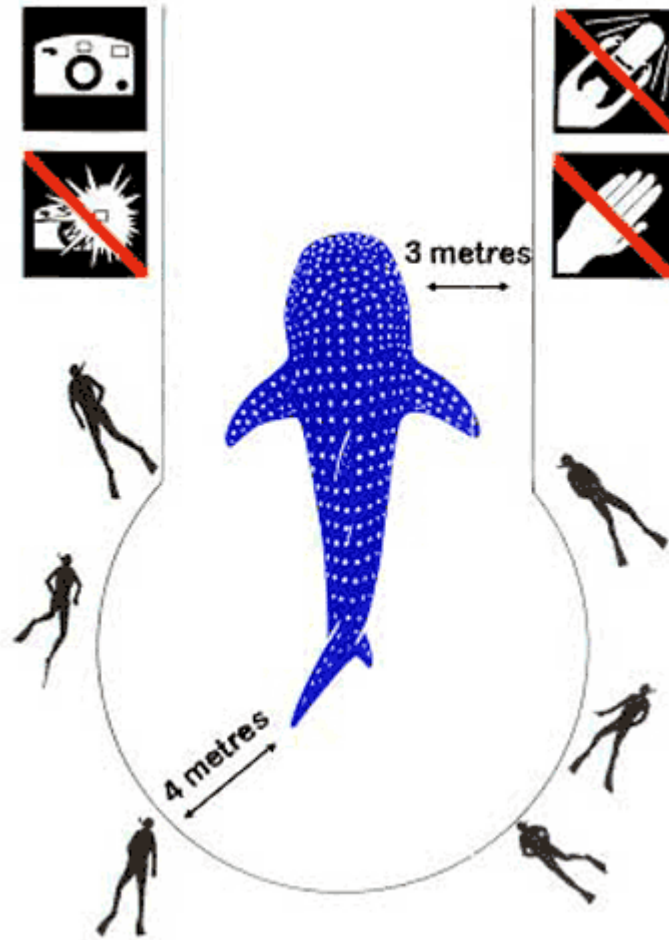
Figure 3.9: The Whale Shark Code of Conduct for snorkellers

Source: (CALM 2003)

The Code of Conduct for snorkellers is provided in English, German and Japanese on all boats and is also available (in English) on DEC handouts. The Code also regulates a vessel's interaction with the whale shark (Figure 3.10):

Exclusive contact zone

- An exclusive contact zone of 250 metres radius applies around any whale shark;
- Only one vessel at a time may operate within the zone for a maximum time of 90 minutes and at a speed of 8 knots or less;

- The first vessel within that zone is deemed to be 'in contact'. The second vessel to arrive must keep a distance of 250 metres from the shark, and any other vessels must be 400 metres from the shark.

Vessel operators in the contact zone

- Must not approach closer than 30 metres to a shark;
- Should approach from ahead of the shark's direction of travel when dropping swimmers into the water;
- Must display both whale shark (commercial vessels only) and dive flags when swimmers are in the water.

Exclusive Contact Zone
Maximum speed within the zone is 8 knots
No other vessels permitted in the zone

Vessel in contact (max 90 minutes)
Vessel and tender approach from ahead of the whale shark's direction of travel.

Diving tender

minimum 30 m

250 metres

All other vessels minimum 400 metres

Whale shark's direction of travel
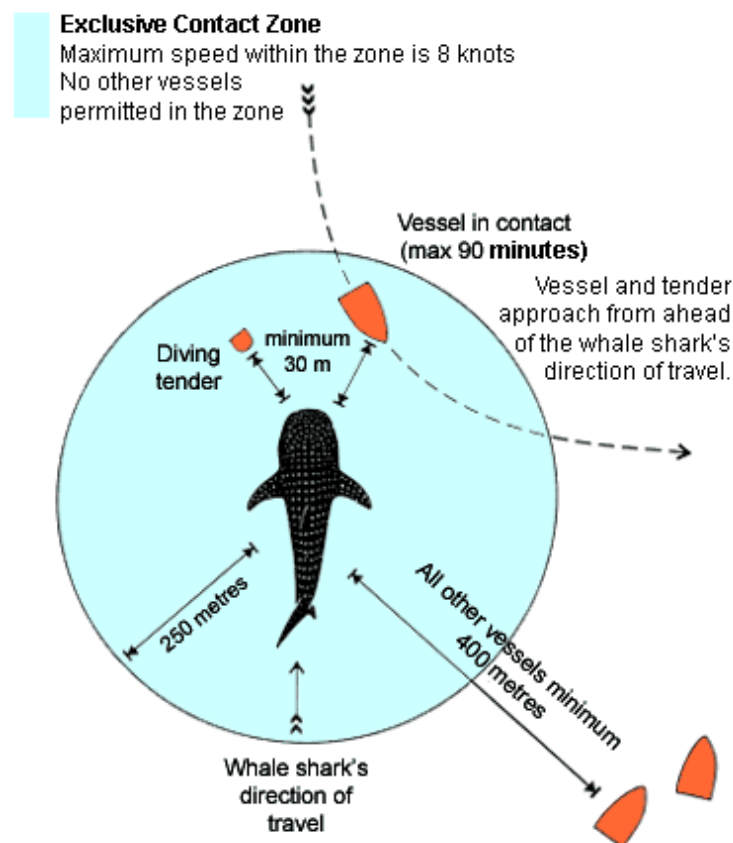
Figure 3.10: The Whale Shark Code of Conduct for vessels

Source: (CALM 2003)

The Code has yet to be updated to include a practice which has been officially allowed by DEC permitting a second vessel within the 'contact zone' for the purpose

of 'taking over' the shark. Referred to as 'handballing', this allows vessels to rotate their groups of snorkellers in the water with the whale shark, to enable all passengers on both boats to have at least one interaction with a whale shark. This practice has been undertaken for several years, but has become prevalent in recent time since more of the operators started sharing the same spotter plane.

Overview of the Experience

Whale shark tours operate out of both Coral Bay and Exmouth. There are a large number of expenses for the operators and, at approximately AU$350.00 per participant, the cost of the experience is relatively high for a single wildlife tourism activity. Most tours are successful in encountering a whale shark, and the majority of operators provide participants with a complimentary second trip if the first trip is unsuccessful.

The schedule for the day for the Exmouth participants is generally as follows (Figure 3.11). The majority are picked up from their accommodation in Exmouth early in the morning and driven to Tantabiddi boat ramp on the Ningaloo Reef side of the North West Cape (Figure 3.2). From the boat ramp they are ferried to the whale shark touring vessels, with most vessels being around 15 metres in length. The number of participants generally ranges from a minimum of six to a maximum of 20 per vessel. Tour operators then provide a briefing on the day's activities. The boats then move to a location on the Reef where the participants are given an opportunity to go snorkelling or Scuba diving. Sometime late in the morning the spotter planes will start searching for the whale sharks.

The spotter planes notify the tour boats if they locate a whale shark and the vessels speed off to the specified location. Since it is generally the case that planes are used collectively by the operators, there can be multiple vessels waiting to drop participants to swim with the same whale shark. The boats will then 'leapfrog' each other, alternating their snorkelling groups in the water with the whale shark. When this is the case, initial interactions will be short, around five minutes. Once all

passengers on all boats have had an initial opportunity to interact with the whale shark, the duration of the interactions will be increased. This usually continues throughout the middle of the day.

Lunch normally takes place after the whale shark interaction. If time and ocean conditions allow, participants will be provided with a second snorkel or Scuba diving session on the Reef. Finally, passengers are returned to the boat ramp in the middle to late afternoon, and they are bussed back to their accommodation.

Figure A: The vessels used for whale shark tours*

Figure B: A spotter plane used to locate the whale sharks*

Figure C: Swimmers entering the water to approach the whale shark*

Figure D: Swimmers following the guide who has sight of the whale shark*

Figure E: Swimmers around the whale shark^

Figure F: Participants returning to Tantabiddi boat ramp after whale shark tour*

Figure 3.11: The whale shark tour experience in chronological order of the days' events

*Sources: *Author ^ Nick Thake*

Conclusion

Chapter Three identified the history, the challenging environmental conditions, and the small scale of development. It also provided background information on whale shark tourism at Ningaloo Marine Park. It notes that whale shark tourism is a developed industry that has grown rapidly over the last decade and a half. Nevertheless, whale sharks are of high conservation value and there is still a need for a greater level of understanding of the potential impacts of human interaction. Furthermore, as tourist numbers grow, there is also a need to ensure that the quality of their wildlife tourism experience is sustained for all participants.

CHAPTER FOUR

WHALE SHARK EXPERIENCE

Adapted from an article publish in the journal *Tourism Management* (Catlin and Jones 2010), this chapter reinterprets data originally collected for a BSocSc (Hons) in 2005 to fit the theory and application of this thesis. Specifically, in 2005 survey data was collected from participants of whale shark tours at the Ningaloo coast facilitating a direct comparison with a study conducted a decade earlier. The results from both surveys fitted the trajectory hypothesised by the Duffus and Dearden model. In particular, a shift in the industry from the periphery towards the mainstream was demonstrated on a variety of levels. In comparison with the 1995/6, whale shark tourism at Ningaloo now attracts more generalist tourists who demonstrated different preferences with regard to the whale shark tourism experience. The 2005 tourist cohort exhibits: a greater age range; a higher tolerance to crowding; and a stronger focus on the non-wildlife components of the experience.

Introduction

In 1995 and 1996, a study of the whale shark tourism experience at Ningaloo Marine Park was undertaken by researchers from James Cook and Southern Cross Universities (Birtles, Cuthill, Valentine, and Davis 1995; Davis 1996; Davis 1998; Davis, Banks, Birtles, and Valentine 1995; Davis, Banks, Birtles, Valentine, and Cuthill 1997; Davis and Tisdell 1996). However, this research was undertaken at a time when both wildlife tourism research and the Ningaloo whale shark industry were new and relatively undeveloped. This chapter reports on an updated study of the whale shark tourist experience, carried out in 2005, enabling a comparison with the previous results.

An understanding of the human dimensions of wildlife tourism is a crucial element of successful wildlife management in nature-based tourism areas (Newsome, Moore, and Dowling 2005; Reynolds and Braithwaite 2001). Traditionally, the collection of information on tourist demand and experiences has been the domain of the private sector, and data has generally been obtained for the purpose of commercial benefit. Conversely, studies of human-wildlife interactions for species management purposes have generally been conducted from a biological science perspective, and tended to focus on the negative impacts on the wildlife concerned and to ignore the human dimension of the interaction (Muloin 1998). This bias was highlighted by Orams (2000 p. 62), with reference to whale watching research:

> …while there is an increasing amount of work directed at understanding the impacts of whale-watching on whales, there has been little effort directed at the impact of whale-watching on whalewatchers themselves…it would seem logical that an understanding of what motivates humans to spend considerable effort and money to experience these animals would be important in developing management strategies for the industry.

In reality, natural resource managers generally have the dual function of conserving wildlife while simultaneously providing quality recreational experiences (Hammit and Cole 1998; Manfredo 2002). Duffus and Dearden (1993) argue that, for

managers to meet both of these objectives, they need a good understanding of the ecological and the human dimensions of their operations. In this regard, the recent emergence of the human dimensions of wildlife management as a field of academic study has greatly assisted natural resource managers in achieving the goal of a balance between recreation and conservation priorities. A good example of the practical benefits, both to conservation and to tourist satisfaction, achieved through a better understanding of participants' experiences can be found in the first study of whale shark tourists at Ningaloo Marine Park (Davis et al. 1997). This 1995 research indicated that there would be no significant decrease in participant satisfaction if minimum human-whale shark separation distances were increased. As a consequence, regulations on separation distances were amended by the park management. A follow-up survey in 1996 documented a reduced perception of crowding amongst participants and considerably fewer incidences of people touching the whale sharks, a prohibited and possibly counterproductive action.

While subsequent studies of the human dimensions of wildlife tourism have been conducted (Moscardo, Woods, and Saltzer 2004), longitudinal studies are lacking. The 1995/6 whale shark research therefore provides a unique base line from which to examine the changes in the demographics and the expectations of wildlife tourism participants over a decade during which wildlife tourism as a phenomenon and the academic attention which it receives have both matured and expanded considerably.

Methods

The research for this chapter was completed in a manner that allowed direct comparisons to be made with the published results from the work undertaken by Davies, Birtles and Valentine in 1995/1996. The 1995 whale shark questionnaire (Davis et al. 1995) was used as the basis for both the pilot and as the framework for the 2005 questionnaire (Appendix 1). Prior to the previous research, Japanese tourists had been identified as making up a substantial proportion of the whale shark participants. As a consequence, Japanese language questionnaires were administered in 1995 and 1996. This process was repeated for this research. Following completion

of the 2005 field work, answers to open-ended questions in the Japanese language questionnaires were translated into English. In the development and interpretation of the Japanese language questionnaires a professional translation service was used.

Questionnaires were distributed to whale shark tourists at both Exmouth and Coral Bay as they came ashore from their tours. The respondents patronised nine different whale shark tour operators. By estimate, over 90% of the tourists approached accepted a questionnaire. A total of 618 questionnaires were issued, with 45 being returned at Coral Bay and 517 at Tantabiddi (Exmouth), giving a total of 562 and a return rate of 91% from those handed out. Of these, 276 were returned directly to the researchers and the remaining 286 were collected from questionnaire return boxes supplied to the tour operators.

Results

Demographics

As shown in Table 4.1, the 2005 survey revealed that there were slightly more females than males participating in the whale shark tours. The 1995 and 1996 data shows a similar pattern. These gender compositions are consistent with studies of tourists on the Great Barrier Reef where snorkelling was the main activity (Birtles, Valentine, Arnold, and Dunstan 2002; Green 1997).

Table 4.1: Gender composition of participants in 1995 and 2005

	1995		2005	
	Number	**Percentage**	**Number**	**Percentage**
Male	218	47.3	248	45.3
Female	243	52.7	299	54.7

Source: 1995 (Davis et al. 1997)

The mean age of respondents in 2005 was 34.0 years. This was very similar to that for the 1995 respondents (32.7 years). On the other hand, there was a greater distribution of the ages in 2005 with a larger percentage of participants under the age

of 20 years and above the age of 40 years (Table 4.2). By comparison, in 1995, the majority (53.4%) of participants were aged between 21 and 30 years.

Table 4.2: Age of respondents in 1995 (n=459) and 2005 (n=546)

Age Ranges	Percentage	
	1995	2005
<14	1.2	4.0
15-20	1.5	7.9
21-25	24.7	12.8
26-30	28.7	22.3
31-35	15.3	15.4
36-40	9.5	9.3
41-50	9.4	16.7
51-60	6.1	8.4
61+	3.5	3.1
Totals	100	100

Source: 1995 data (Davis, Banks, Birtles, and Valentine 1995)

The whale shark experience at Ningaloo Reef attracts not only domestic tourists but people from throughout the world. Reference to Table 4.3 shows that there has been a marked change in the national composition of the whale shark tourists. In particular, while Japanese participants were the largest single group of responding whale shark participants in 1995 and 1996, in 2005 they represented only 6.8% of the sample. Australian participants made up the majority (50.6%) in 2005, followed by respondents coming from the United Kingdom (18.3%) and continental Europe (16.5%).

Table 4.3: Origins of the whale shark participants for 1995, 1996 and 2005

Nation/Region of Origin	Percentage		
	1995 (n=474)	1996 (n=373)	2005 (n=541)
Australia	34.9	24.4	50.6
Japan	42.3	45.6	6.8
Other Asia	1.6	0.8	1.7
UK and Ireland	6.5	7.8	18.3
Other Europe	10.4	14.2	16.5
United States	2.3	5.9	3.5
Canada	1.1	0.3	1.1
New Zealand	0.9	0.5	0.9
Other	0.0	0.5	0.6
Total	**100**	**100**	**100**

Source: 1995 and 1996 data (Davis 1998)

Scuba diving qualifications were used as an indicator of participant specialisation. As can be seen in Table 4.4, the proportion of people holding Scuba diving qualifications has decreased dramatically over the last decade from the relatively high proportion of 80% in 1995 to little more than half of the participants in 2005.

Table 4.4: Scuba qualifications of participants in 1995 (n=465) and 2005 (n=535)

	Percentage	
	1995	2005
Scuba Qualifications	80.0	52.3

Source: 1995 data (Birtles et al.1995)

The Whale Shark Experience

Respondents were asked to rate the overall quality of their 'Whale shark experience' on five-point Likert scales with 1 representing 'poor' and 5 'excellent'. Table 4.5 displays the mean ratings from these responses in 1995 and 2005. In both years very similar levels were recorded.

Table 4.5: Overall quality ratings for 1995 and 2005

| | 1995 | | 2005 | |
Overall Quality	Number	Rating	Number	Rating
Whale shark experience	446	4.56	527	4.42

Source: 1995 data (Davis et al. 1997)

Participants were asked to list the three best aspects of their whale shark trip in an open-ended format. Their answers were coded for consistency with the major themes identified in the 1995 results. Table 4.6 displays the percentages for the different subthemes that were noted in the two years. For both dates responses directly related to the whale sharks constituted a clear majority (78.4% in 2005) of the responses, and comprised five of the eight most frequently self-nominated sub-themes. As expected, since it is the purpose of the tours, most of these responses fell into the categories of swimming with (15.1%) or seeing (15.7%) the whale sharks: "I saw the whale shark (I have been dreaming [of this] for a long time)"; "Swimming with the whale shark'; "Snorkelling with a real whale shark"; "Seeing a whale shark for the first time"; and "The moment the shark appears out of the blue". The first and third ranked sub-themes in 2005 were much more frequently cited than was the case in 1995. The first ranked response, 'Other Scuba diving and snorkelling', related to the opportunities to go snorkelling and Scuba diving before and after the whale shark interaction. There were also many more positive responses regarding the 'Staff, food and operations': "Having someone with knowledge to explain behaviour"; and 'Friendly staff and good atmosphere on board the boat". Together with the observation of fish and coral, encounters with other large marine animals were also significant, ranking fifth (12.5%) in 2005. Such responses included "Seeing dolphins swim next to the boat"; "Seeing a bronze whaler"; and "Seeing a manta ray from the boat".

Table 4.6: Sub-themes of the best aspects of the whale shark experience in 1995
(n=464) and 2005 (n=539)

2005 Ranking	Sub-themes	Percentage 1995	2005
1	Other Scuba diving or snorkelling	5.0	16.4
2	Seeing, watching, observing or finding the whale shark	13.0	15.7
3	Staff, food and operations	5.2	15.4
4	Being or swimming with, next to or alongside the whale shark	11.4	15.2
5	Other animals, reefs or nature	8.9	12.5
6	Being close to the whale shark	7.4	5.5
7	Size or number of whale shark/s	6.1	4.3
8	Self experiences or interactions with the whale shark	4.4	3.3

Source: 1995 (Birtles et al. 1995)

In addition to determining the best components of the experience at both dates, the survey, again using an open-ended format, sought to identify the elements that detracted from the whale shark experience. The responses to this question are categorised and tabulated in Table 4.7. 'Sea sickness' was the number one detracting element of the experience in 2005 (17.7%), a considerably greater response rate than in 1995. Also more prominent in 2005 was the proportion of complaints directed at the boat operations and crew (16.3%). Responses included specific references to the crew such as "Cowboy tour guides"; "Conflicting DM's [Dive Masters]"; and "One of the instructors was awful…they yelled at us". Criticisms of the tours included "It was a bit dangerous everyone was jumping on top of each other…": "Smell of diesel"; "Not enough shade"; and "No real information given about the known biology of the sharks…".

'Crowding' (in the immediate vicinity of the whale shark), which had ranked first in 1995 fell to third in 2005 (13.2%). However, another form of crowding, namely 'The number of other boats' (6.7%) emerged as a new concern in 2005. Responses included "It's becoming tourism overkill, too many boats in the area at one time"; "Too many other boats competing to get their customers with the whale sharks" and "Too many boats/operators – just like a hunt on the animal". This was interpreted as a new issue given that the number of vessels likely to be around a single shark has increased since 1995.

Table 4.7: Elements detracting from the whale shark experience in 1995 (n=227) and 2005 (n=233)

2005 Ranking	Theme	Percentage 1995	2005
1	Sea sickness	8.9	17.7
2	Complaints about boat operations/crew	6.6	16.3
3	Crowding	14.6	13.1
4	Problems with other snorkellers	10.3	11.0
5	Lack of time with whale sharks/time to find them	8.0	7.1
6	Too many other boats	N/A	6.7
7	Weather/sea conditions	8.0	6.0
8	Self or equipment problems	7.2	4.3

Source: 1995 (Birtles et al. 1995)

Perceptions of Crowding

The Code of Conduct stipulates that a maximum of ten participants (in addition to a tour guide) can be in the water with a whale shark at any one time. The survey asked participants to nominate the number of people that they felt should be in the water with the whale shark/s. As noted, the trend in Table 4.8 shows an increasing level of tolerance of more snorkellers across the three surveys. The greater tolerance for more snorkellers in the water in 1996 as opposed to 1995 was attributed by Davies et al. (1997) to an increase in the minimum separation distances between the whale shark and the snorkellers from one to three metres in 1996, thus increasing the viewing perimeter of the whale shark. Given that regulations on separation distances have not altered since 1996, a direct comparison of 2005 with 1996 was deemed appropriate. A Chi-square test showed a significant difference ($\chi^2=112.992$, *df* $=8$, p$\leq$0.05) between the findings from these two years. Particularly evident is the more than two fold increase in the percentage of people who saw 10 and greater than 10 snorkellers as being acceptable.

Table 4.8: Preferred number of snorkellers with the whale shark in 1995, 1996 and 2005

Snorkellers in the water	1995 (n=434)	1996 (n=366)	2005 (n=528)
< 4	4.6	3.8	1.0
4	16.6	9.1	1.9
5	23.3	20.0	9.9
6	26.5	21.9	11.0
7	6.2	5.8	8.8
8	8.8	14.2	14.1
9	1.4	3.6	3.8
10	10.6	21.0	44.6
> 10	2.1	0.8	5.5
Total	**100**	**100**	**100**

Source: 1995 and 1996 data (Davis 1998)

Touching the Whale Shark

Whale shark tour participants are strictly prohibited by the Code of Conduct from touching a whale shark. Respondents were asked whether they had made contact with the whale shark and, if so, for what reason/s. Reference to Table 4.9 shows that incidences of touching were considerably more frequent in 1995 than in 1996 and 2005. Davies et al. (1997) believed that an increase in the minimum separation distance from one to three metres was also responsible for the decrease in the incidences of touching between 1995 and 1996. A Chi-square test confirmed that the 2005 rate of touching was significantly different from the 1995 rate ($\chi_2 = 13.032$, *df* =1, p≤0.05), but not from that in 1996 ($\chi_2 = 0.361$, *df* = 1, p>0.05).

Table 4.9: Incidence of contact with the whale shale shark

Incidences of Touching	1995	1996	2005
Number of respondents	464	375	562
Number of touches	34	8	16
Percentage	7.3	2.1	2.8

Source: 1995 and 1996 data (Davis 1998)

Discussion

Consistent with the shift from specialist to generalist wildlife tourists over the time period, as predicted by Duffus and Dearden's framework, the results from this research suggest that whale shark tourism at Ningaloo Marine Park, despite still being an adventurous activity, has moved significantly towards the mainstream over the last decade. There is now a much wider age distribution among the 2005 tourists, which confirms that the experience is now more attractive to both older and younger participants. Moreover, the composition of nationalities of the whale shark tourists now reflects more closely that of the general tourist population in the region for that time of year (Wood 2003). The 1995/6 results exhibited a much greater proportion of international participants, in particular Japanese, even though the vast majority of tourists visiting the region at that time were Australians (Wood and Dowling 2002) indicating that whale shark tours they were something of a niche market at that time.

Since then, tourism in the region has grown substantially and the proportion of international participants has increased. This would suggest that whale shark tourists are now being sourced from the general tourist population, rather than from particular national or interest groups. In support, the results from a follow up survey of whale shark participants in 2006 (see Chapter Five) showed that only 37% had come to region specifically to interact with whale sharks.

The types of experiences that participants were seeking in 2005 were broader than those sought by their counterparts in 1995. For instance, the 2005 evidence indicates that the quality of the tour operators has become a much greater factor influencing the satisfaction levels of whale shark tourists. In 2005, matters related to boat operations were given increased prominence in responses about the elements that detracted from the whale shark experience. Conversely, these were more frequently mentioned as positive factors in 2005. This broader focus on the experience corresponds with Dearden, Bennett, and Rollins' (2006 p356) findings on the distinctions between Scuba dive tourists in Thailand: "The features more important to highly specialized divers were aspects of the diving experience, whereas several factors identified as being more important to less specialised divers, were aspects of the dive trip experience, rather than the dive trip itself.".

Also consistent with this transition from specialist to generalist wildlife tourists are the results from the questions on perceptions of crowding. In 2005, respondents expressed a much greater tolerance to more people being in the water with the whale shark/s. A number of studies on visitors to national parks have consistently established that more experienced and skilled recreationalists are less tolerant to crowding (Bryan 1997; Shelby and Vaske 1991). This has also been confirmed in a marine setting. Inglis, Johnson, and Ponte (1999) discovered that experienced Scuba divers favoured environments with fewer people; in comparison, novices were more accepting of greater numbers of people.

As another indicator of a decline in the percentage of specialists, the proportion of participants with Scuba diving qualifications has decreased substantially. In response to the decrease in the proportion of participants with Scuba qualifications and, consequently, in the demand for Scuba diving experiences on the whale shark tours, most operators are phasing out the option of diving from their tour packages. This is due to the extra effort and cost required to undertake Scuba supervision for a declining minority of participants.

A result of such an increase in the proportion of novice participants in a wildlife tourism activity is the inherent risk to the safety of the participants themselves. During the whale shark interaction, snorkelling can take place for substantial periods of time and, depending on the behaviour of the whale shark, at challenging speeds. Furthermore, sometimes this occurs in deep (up to 200 metres) and, on occasion, rough water. A potential consequence is that inexperienced and possibly vulnerable people are placed in life-challenging situations. Currently the operators employ a variety of discretionary safety measures (including head counts and having staff on watch) and, in most cases, snorkellers are provided with a supervised snorkeling session at the beginning of the tour if required. However, there is scope to increase the level of safety on the tours through the introduction of mandatory procedures.

Another increased safety risk has direct implications for the tour operators. From an analysis of over a hundred Australian adventure tourism brochures, Wilkes, Atherton and Cavanagh (1994) found that most tourism operators rely on exclusion or

limitation clauses and liability release forms for their legal protection, and this is the case for most whale shark tour operators. However, under Australian law, reliance on this form of legal protection is usually ineffective (Wilks and Davis 2000). Consequently, Wilks and Atherton (1994) suggest that operators should always communicate the intrinsic risks of their activity within their tourism marketing materials, so that travel agents and tour desk staff can provide accurate information and clients can make informed decisions.

Reynolds and Braithwaite (2001) identify six quality factors that are necessary for a satisfying wildlife tourism experience: authenticity, intensity, uniqueness, duration, species popularity, and species status. The whale shark experience scores highly on all of these attributes. Thus, not surprisingly, high satisfaction levels with the whale shark experience were found across all three surveys. Duffus and Dearden (1990) argue that, as limits of acceptable change are breached by increased tourism pressures, satisfaction can decrease. A number of changes have occurred in the whale shark experience, since the previous studies took place in 1995/6. Two aspects, in particular, could be seen as significantly altering tourists' perceptions of their experiences. Firstly, the number of people per vessel has increased. When the previous study was conducted, the majority of boats would only take a maximum of 10 participants per tour. This number has since doubled.

Secondly, there is now greater sharing of spotter planes (which are used to find the whale sharks) amongst the operators. Consequently, when there are a limited number of sharks, which is not uncommon, the boats will rotate their customers in and out of the water with the sharks, to provide all of the customers with an interactive opportunity. This usually results in participants having a series of short swims with the shark rather than fewer more protracted interactions. Furthermore, with an increase in the 'sharing' of whale sharks, participants are more likely to be aware of the presence of other vessels during their interactions. Despite these changes, it appears that the socially acceptable limits of change have yet to be exceeded. This may well be due the different perceptions and values that generalist as opposed to specialist wildlife tourists attribute to their experience.

The limits of acceptable change for interaction with any given wildlife species are not easily determined. The primary DEC management objective for whale sharks is that they remain undisturbed whilst in Ningaloo Marine Park. However, determining what constitutes 'disturbance' is not readily measurable. As mentioned in Chapter Three, evidence on the negative impacts of tourism on whale sharks is far from conclusive. Log books are completed by the operators, in which information on all interactions—using criteria such as time, place, length, sex, and shark behaviour—is recorded. However, log books in their current form are not a reliable method of collecting data on whale shark behaviour since many of the indicators recorded are highly subjective. The results from this research on snorkellers' contacts with sharks (Table 4.9) provide quantifiable evidence on one aspect of possible whale shark disturbance.

Proximity to the whale shark is central to the entire whale shark experience. Being close to the whale shark was listed as one of the most important aspects of the experience in all the surveys. The 2005 findings on separation distances are consistent with the 1996 findings, namely that the increased separation distance levels that were implemented after 1995 continue to reduce the incidence of contact between snorkellers and whale sharks. This would seem to confirm that an effective balance has been achieved and maintained between overall participant satisfaction levels and contact and separation distances.

Nevertheless, this is only one indicator of disturbance and it is inconclusive at best. As Sorice, Shafer and Scott (2003) contend, the relative absence of consistent evidence of wildlife being negatively impacted through exposure to swim-with tourism may be misleading because any adverse impacts are not always immediate, obvious, or amenable to detection. For instance, Watkins (1986) found that whales' behaviour and reactions changed gradually, but considerably, after they were exposed to human activities, including whale watching. Ideally, there would be several easily quantifiable indicators to measure levels of disturbance in the whale shark population. However, within a data restricted environment, more research will need to be undertaken before this is possible. In the interim, the Precautionary Principle should be applied, and a lack of full scientific certainty should not be used

as a reason for delaying measures to prevent environmental degradation (Bates 2002).

A potential consequence of the growth in tourism numbers is that the quality of an interactive experience can be comprised through increased competition and the entry of less scrupulous tour operators. As Dearden et al. (2006 p359) discovered for dive tourism in Phuket, Thailand: "Dive companies are so intent on undercutting each others' prices they search for savings in all areas, including safety and provision of educational services". Despite the increase in the popularity of whale shark tourism, erosion of the quality of the experience is not yet apparent. Mitigation of the negative consequences is sought through limiting the number of tour operator licences to 15. Since the tours run at 30% capacity for the whole season, an increase the total number of licences does not appear necessary, and could potentially lead to the detriment of the industry.

As stated earlier, the only regular collection of participation numbers for the tours is undertaken during the official whale shark season (April-May). Although this is not a census, it can offer a guide to the growth in the industry. As highlighted by the graph in Figure 3.7, the growth in whale shark tourism mimics that of Butler's tourism life cycle model, with stages of discovery and rapid growth. Currently it appears that whale shark tourism growth has plateaued. Furthermore, Duffus and Dearden (1990) argue that a wildlife tourism industry's level of maturity can be predicted by reference to the prevailing levels of user specialisation. Whale shark tourism at Ningaloo now attracts a majority of generalists. A major limiting factor to greater participation in the tours is the isolation of the interaction site. Ningaloo Reef is well over 1000kms from the capital city of Perth and the cost of airline tickets to and from the area makes it the one of the most expensive tourist destinations to reach in Western Australia.

Nevertheless this situation may need reassessment in the near future, particularly if the area continues to grow as a tourist destination (WAPC 2004). There are currently plans to upgrade the Coral Bay airport to receive the same size of aircraft as those that arrive at Exmouth (Learmonth) allowing direct flights from Perth (Carter 2006). In addition, there is a major increase in the accommodation capacity planned for

Coral Bay (WAPC 2004). These factors may warrant a more even distribution of licences between Coral Bay and Exmouth. Nevertheless any alteration or increase in tourist numbers or licences should be accompanied by greater research into the potential negative impacts of tourism on whale sharks.

Conclusion

Tourism is a dynamic industry and this chapter has provided a valuable insight into changes experienced by one wildlife tourism industry over a decade. The results from this study conformed to the trends hypothesised by Duffus and Dearden's wildlife tourism framework. The framework has thus proven effective in predicting and explaining the transformation in the whale shark tourism industry over the last decade. In addition, the results from this study have demonstrated the importance of having correct management and policies in place to mitigate the potential negative effects of growth in a wildlife tourism industry. Lastly, the successful application of this model to an area of research that is largely atheoretical should be seen as a positive endorsement for uptake and refinement of theory relevant to wildlife tourism.

CHAPTER FIVE

EXPENDITURE

The previous chapter described the progression of whale shark tourism at Ningaloo from a specialised to a mainstream activity over the period 1995-2005. Modified from a publication in the *International Journal of Tourism Research* (Catlin, Jones, Norman, and Wood, 2010), this chapter is likewise a comparison of current conditions with those a decade earlier. However, in this chapter tourism expenditure is examined. Not only does this investigation provide a greater insight into changes in expenditure over time and user type, it also highlights the importance of using accurate economic tools to value the conservation of species.

Introduction

Whale shark tourism is an important drawcard for the Ningaloo coast region. In addition to attracting local and international visitors and making a contribution to the regional economy, it also fits within the category of 'iconic' tourism (Stoeckl, Smith, Newsome, and Lee 2005), providing the region with a recognisable brand and point of difference from its competitors. Earlier research into whale shark tourism valued the expenditure of whale shark tourists in the region at $4.7 million (Davis, Banks, Birtles, Valentine, and Cuthill.1997). However, the Davis et al. study was conducted in 1995, only six years after the first whale shark tours were offered and when the industry was in its infancy.

This chapter will discuss and assess the primarily economic changes to whale shark tourism since 1995, focussing on the local economic impact of whale shark tourists' expenditure. This chapter contains four sections. The first section reviews the literature analysing the economic impact of tourist expenditure. The second describes the methodology focussing on the survey questionnaire, its administration and on the treatment of the data. The third presents the survey results and compares them to those obtained in the earlier Davis et al. study. The final two sections discuss the implications of the results. They draw conclusions regarding changes in the local whale shark tourism industry and the effects of industry consolidation in a wildlife tourism industry on tourist expenditure and characteristics.

Literature Review

While the economic analysis of tourism is increasingly important to tourism planning and policy development (Tyrrell and Johnston, 2006), measuring the economic impacts of nature based tourism has proved to be a particularly valuable tool for increasing the recognition of the economic value of wildlife and National Parks by both governments and local communities, and thereby for helping to ensure adequate investment in park and wildlife tourism management (Eagles, 2002; Wood and Glasson, 2006). The policy and budget relevance of such studies underlies the recent growth in assessments of the expenditure of visitors to National Parks in Australia

(Carlsen, 1997; Carlsen and Wood, 2004; Driml, 1998; Economics and Regulatory Reform Unit, 1999; Economics and Regulatory Reform Unit, 2000; Pearson, Russell, and Woodford, 2000; Stoeckl, Greiner, and Mayocchi, 2006; Ward, 1999; Wood, Wood, Glasson, Carlsen, and Hopkins, 2006) and other countries (Eagles, 2002; Fesenmaier, Jones, Um, and Ozuna, 1989; Lee and Han, 2002; Nayak, 2001; Saayman and Saayman, 2006; Xue, Cook, and Tisdell, 2000). For example, Stoeckl et al. (2005) found that visitors who interacted with dolphins at Monkey Mia, Western Australia, contributed between $4.2 million and $8.8 million per annum in direct expenditure to the local economy and that those who participated in whale watching in Hervey Bay, Queensland contributed between $6.5 million and $11.5 million per annum. While the range of expenditure here is large, the level of expenditure is sizable for small regional economies even at the lower end of the scale. In another study, Tisdell and Wilson (2002) found turtle viewing at Bundaberg, Queensland, contributed $0.8 million annually in tourist expenditure to the local economy.

There are two broad approaches that can be used to assess the economic value of nature based tourism (Driml, 1998). The first approach involves measuring the economic benefits or total benefits of tourism and then subtracting any costs to society in the provision of those benefits. A problem with this group of approaches for whale shark tourism at Ningaloo, given the remote regional location in which it occurs, is the data-poor environment and the concomitant difficulties of accessing data from local businesses. The second approach involves calculating the direct expenditure associated with tourism and recreation and using a multiplier to calculate the net economic benefit of tourism to the region. Mihalic (2002) argues for the centrality of expenditure to the understanding of the economic consequences of tourism. She writes that "the consumption of tourism is at the economic centre of the economic measurement of tourism and the foundation of the economic impacts of tourism" (2002, p. 88). Similarly, Pearce (1981, p. 240) argues that establishing a figure for direct expenditure provides the "first indication of the significance of tourism to a national, regional or local economy". Within this second group of approaches, direct expenditure can be calculated through the use of surveys or through the application of expenditure models (Frechtling, 2006). Given the data

poor environment at Ningaloo, it was decided to use a survey to gather information directly from participants.

This study uses the following formula to calculate visitor expenditure:

Total visitor expenditure = Average daily visitor expenditure x average length of stay x total number of participants

To calculate the average daily expenditure, visitors were asked to record, their length of stay, the total expenditure for their expenditure group and their expenditure group size. According to Stynes and White (2006), this is easier for participants than recording individual expenditures. It was decided to sample the number of paying whale shark tour participants only, since many of the non-paying participants are repeating an earlier unsuccessful tour and other non-paying participants were researchers who undertook multiple trips.

Johnson and Moore (1993) argue that providing figures for the total expenditure of tourists who visit a particular resource overestimates the economic impact of that resource. Instead, it is necessary to know the expenditures that are specifically due to that resource—the expenditure that would be lost if that resource were not there. In this case, such a measurement was made through a scenario question addressing whether participating in a whale shark tour was the reason for a trip, or for the destination choice of Ningaloo, or whether the whale shark tour increased the length of time that they spent in the region. Recent economic studies of wildlife tourism participants have measured the expenditure 'attributable' to the resource, generally through asking such a question (Stoeckl et al., 2005; Carlsen, 1997; Carlsen and Wood, 2004). However, to date there has been a lack of detailed attention to terminology in such studies. A scenario question measures what is labelled the 'substitution' value, or the amount of money that would have been spent outside the region ('substituted' with a trip elsewhere or staying at home) if a particular activity or resource were not available.

A number of studies use input-output (IO) multipliers to calculate the indirect and induced effects of visitor expenditure on the economy (Driml, 1998; Economics and

Regulatory Reform Unit, 1999; 2000; Saayman and Saayman, 2006). Recently there have been a number of criticisms of the use of IO multipliers, particularly because they do not capture the feedback effects of tourism growth within an economy (Carlsen and Wood, 2004; Dwyer, Forsyth, and Spurr, 2004). Dwyer et al. (2004) argue that IO multipliers measure the positive effects of tourism growth on economic activity but ignore the fact that this growth reduces the resources available to other industries within the economy, which can, in some cases, outweigh the positive effects (see also Sahli and Nowak, 2005). They advocate the use of Computable General Equilibrium methods (CGE), which model the interactions between different sectors of the economy. However, both IO and CGE require economic data sets that were not available for the Ningaloo region. Regional locations are generally heavily reliant on imports and consequently have very small multipliers due to this high level of leakage (Stoeckl et al., 2006; Stoeckl et al., 2005). Rather than using estimates to generate IO tables (a precondition of CGE analysis), a number of recent studies have chosen to limit their analyses to direct visitor expenditure in the region citing the absence of IO tables and their small value in regional locations (Carlsen and Wood, 2004; Stoeckl et al., 2006; Stoeckl et al., 2005). Given these considerations, this study did not employ multipliers and the expenditure figures given here should therefore be seen as a conservative indicator of the value of the whale shark tourism industry to the regional economy.

Methodology

Calculating visitor expenditure in a region is conceptually simple but it entails many difficulties in collecting and treating data any of which can potentially skew the results (Frechtling, 2006). The first challenge is to ensure that the survey sample reflects the characteristics of the population (in this case, whale shark tour participants). The demographic parameters of the entire whale shark tourist population were not available for comparison with this study, since such data are not collected. However, in this case the results from the survey described in Chapter Four found very similar demographic characteristics to those of the participants of this study in the categories of age, gender and nationality. This suggests that the sample for this study is representative and that it is legitimate to generalise to the broader population of whale shark tour participants on the Ningaloo coast.

The Ningaloo regional boundary captures most important aspects of the impact from visitor expenditure, in particular accommodation costs, because the area is isolated and a whale shark tour is a daylong activity that departs around 7.30am. Only 2.8% of respondents listed their accommodation location as 'other', meaning other than Exmouth, Coral Bay or the Cape Range National Park. Even so, and for reasons of distance alone, these individuals were highly likely to be still staying within the North West Cape region. The surveys were distributed to whale shark tour participants who departed from Exmouth only. Tours that departed from Coral Bay were not surveyed. However, the majority of operators (and therefore the majority of participants) depart from Exmouth, as indicated by the location of licences, and the mix of accommodation is similar for both locations. Furthermore, expenditure patterns are likely to be similar for the two locations.

Questionnaire Design and Administration

The questionnaire used in the survey was based on those used by Wood since 1997 in the Ningaloo region (Wood, 2000). The survey was developed further by Carlsen and Wood in conjunction with the Sustainable Tourism Cooperative Research Centre (Carlsen and Wood, 2004). Through a process of refinement, the questionnaire

(Appendix 2) has been reduced to two pages that capture the significant elements of visitor expenditure and visitor characteristics. Accommodation and activity costs; accommodation type; visitor origin; household income and age are particularly important (Wood et al., 2006). The expenditure categories are similar to those suggested by Stynes and White (2006) and cover accommodation; food and drink; transportation; other costs (including souvenirs and retail); equipment costs; and activities costs. Telescoping, the inclusion of expenditure incurred outside the region, was further reduced by asking participants to provide figures for both purchases inside and outside of the region.

As with the survey presented in Chapter Four, the questionnaires were administered, in both English and Japanese language versions, to whale shark tour participants from the month of April through to June 2006. Two different methods of administering the survey were employed. First, questionnaires were distributed directly to the whale shark participants at Tantabiddi boat ramp to the north of Ningaloo Marine Park, using the same method as that described in Chapter Four. Although an exact response rate was not calculated for this survey, the questionnaire was received very well by the whale shark tour participants and a high return was attained (estimated to be >90%). This method accounted for close to one third of all completed questionnaires.

The other mode of distribution was to give bundles of the questionnaires to the whale shark tour operators. The survey forms could then be passed on to the participants by the operators. This method allowed for a large number of questionnaires to be distributed. Davis and Tisdell (1998), in their previous study of whale shark tourists, acknowledged that this approach may have introduced bias as a result of variations in promotion levels amongst operators. To overcome this potential bias, regular contact was maintained with operators to encourage participation. In addition, it was assumed that the inclusion of a whale shark educational brochure and a sticker promoting whale shark photo identification would persuade tour operators to hand out the survey forms. From both methods of distribution, a total of 804 questionnaires were completed and returned. Analysis of the results showed very little variation between those obtained from the two methods of survey administration.

Data Treatment

Before beginning analysis, it was necessary to address a series of potential measurement errors and to formulate strategies for dealing with contaminants and outliers. Five potential measurement errors relating to visitor expenditure were addressed in preparing the data for analysis.

- All of the activities costs were reviewed against the cost of a whale shark tour ($300-350) and, where the entries were not consistent with the cost of the tour for that number of participants, these returns were reviewed or excluded or, when appropriate, the number of participants was excluded or corrected. For example, one participant entered $300 for activity expenditure for a group of two people. Since the cost of a whale shark tour is over $300 per person, either the expenditure or the number of people in the expenditure group was likely to be incorrect and the expenditure results were excluded.

- Following Stynes and White (2006), all of the expenditure categories were reviewed and a 'zero' was entered for blank categories where the rest of that respondent's entries indicated that this may be the case. This generally occurred in the transportation expense category. For instance, it is possible that a participant on a package tour paid for their transportation outside the region, or those participants who drove themselves bought their petrol elsewhere. Where this was possible and the travel expenditure was blank, a 'zero' was entered.

- The high cost of travelling to the region by either road or air travel could have potentially inflated the travel costs in the region, if the question was misinterpreted. However, care was taken to remove any individual travel costs which were unreasonably high. For instance, one respondent entered $10,000 as the travel expenditure for a trip lasting three days. This is likely to be the cost of flying to Australia, which does not itself contribute to the regional economy. Travel expenditure was excluded when this was likely to have occurred.

- The most likely contaminant to the data was participation by residents. For this reason participants who reported to have stayed for extended periods in

rental accommodation were excluded from the study as they were deemed to be residents.

- Participants who stayed over four weeks were excluded as outliers (n=14); these constituted only 1.7% of total respondents. Participants who stayed for extended periods skew the length of stay figure and are not representative of the total sample.

Twenty eight surveys were excluded using this methodology. Given the often skewed distribution of expenditure data, it is recommended that the mean expenditure is calculated using either a trimmed mean or a weighted mean (Pol, Pascual, and Vasquez, 2006). However, Stynes and White (2006) recommend the use of a trimmed mean (and by extension a weighted mean) only in instances where it is impossible to vet the entries or where the size of the data set precluded this option. Given the principles applied to verify the data and the attention to outliers, this study uses the mean of each expenditure category to calculate expenditure.

Results

Demographics

The number of whale shark tour participants was and still is provided by a head count undertaken by Western Australian Department of Environment and Conservation (DEC) as part of their regulation of the whale shark industry. Previously, this head count only covered the official two month whale shark season from March until May even though whale shark tours can run for a period almost double the length of the official season. The first 'complete' annual headcount, which is employed here, was undertaken in 2006 and the total number of paying participants was 6,677.

As mentioned the survey produced demographic results almost identical to those of the first survey (Chapter Four), thus only demographic items results which were not considered or analysed in Chapter Four are compiled here. Table 5.1 displays the

demographic and trip characteristics of the whale shark tour participants. The long distances required to travel to the North West Cape, compounded with the relatively high cost of swimming with whale sharks, have the potential to restrict the experience to people with higher incomes. It could therefore be anticipated that a large proportion of people would have higher incomes, as was the case in these results. As can also be noticed, most visitors stayed for a week or less, with camping and caravan parks as the most used types of accommodation by a small margin over hotels/motels, and followed by backpackers' accommodation.

Ningaloo is one location in an exclusive group of sites where the opportunity to view whale sharks is readily available. Thus it is interesting to note that only 37.0% came specifically because whale shark tours were available in the region. On the other hand, 60.2% would have still visited the area regardless of whether the whale shark tours were available. However, close to two thirds (65.9%) of this group would have spent less time locally if the whale sharks were not present. This suggests that the other attractions of the region are also an important component of peoples' decisions to visit the area.

Table 5.1: Demographic and trip characteristics of whale shark participants (%)

Variable	Categories				
	$10,000 - $29,999	**$30,000 - $39,999**	**$50,000 - $74,999**	**$75.000 - $99,999**	**$100,000 +**
Annual Household Income (n=661)	16.9	20.4	20.0	16.0	26.6
	1-3	**4-7**	**8-14**	**15+**	
Number of Nights in the Region (n=726)	41.0	46.8	11.0	1.1	
	Campsite & Caravan Park	**Backpackers**	**Hotel / Motel**	**Other**	
Accommodation Type (n=774)	37.0	25.7	31.3	6.1	
	Would not have visited (a)	**Less time (b)**	**The same amount of time (c)**	**Do not know (d)**	
If whale sharks were not available (n=774)	37.0	39.7	20.5	2.8	

Participant Expenditure

The *per capita* total and nightly expenditure in the Ningaloo region is presented in Table 5.2. The per night expenditure category was based on the average number of nights in the region, 4.8. Despite removing outliers from the data set, the median total expenditure was noticeably lower than the mean for all categories. This is typical of visitor expenditure data and is due to the large range of individual expenditures. Notwithstanding this, the mean is still deemed to be the appropriate figure for measuring average expenditure (Stynes and White, 2006).

Table 5.2: Total and per night visitor expenditure

	Number	Median Trip Expenditure	Mean Trip Expenditure	Mean Per Night Expenditure
Travel	455	$63.98	$130.32	$27.11
Accommodation	565	$115.16	$186.39	$38.78
Food and Drink	555	$95.97	$130.42	$27.13
Activities	523	$319.89	$363.54	$75.63
Equipment	498	$15.99	$45.07	$9.38
Other	490	$22.39	$38.53	$8.02
Total		**$633.38**	**$894.28**	**$186.04**

Not surprisingly the greatest proportion of participants' expenditure in the region was on activities. Throughout the whale shark season, tours are consistently offered for between $300 and $400. In addition, tourists may also pay for other activities in the region, such as Scuba diving and nature based tours. The relatively low average nightly expenditure on accommodation ($38) can be explained by the majority of respondents residing in campsites, caravan parks and backpackers' hostels (Table 5.1). During the whale shark season, there is generally a wide range of accommodation available (for instance, caravan park occupancy is under 50 percent), although visitors staying in the region at the end of a long whale shark season that overlaps with the July school holidays would find their accommodation options limited and would struggle to find accommodation without a booking.

The total and nightly expenditures were further categorised according to the effect of the presence of whale sharks on participants' travel plans in the region. Respondents

who stated that they did not know how the presence of whale sharks affected their travel plans were excluded since their sample size was too small for consideration. As seen in Table 5.3, the respondents who visited the region primarily for the whale sharks spent considerably more per day than did the other visitors.

Table 5.3: Expenditure based on whale shark related trip intentions

	Per Person Trip Expenditure	Ave Number of Nights	Per Night Expenditure
Stayed the same amount of time (n=86)	$860.37	5.4	$158.49
Stayed less time (n=184)	$861.30	5.0	$172.62
Would not have visited the region (n=174)	$952.10	4.3	$219.28

Once the *per capita* direct expenditure was known it was possible to calculate the total expenditure in the region by whale shark tourists ($5,971,108). This was achieved by multiplying the total trip expenditure *per capita* by the number of whale shark tour participants for the entire season. The total number of full fee paying whale shark participants (n=6,677) is seen as a conservative estimate, since tour operators are not efficient at keeping records outside of the official season. It is highly likely that participant numbers are higher than 6,667 and may have been as high as 8,000 in 2006, which was considered a short whale shark season, and 10,000 in 2005, when the presence of whale sharks overlapped with the July school holidays peak tourist period. Nevertheless, it is the most robust figure available on total tourist numbers.

The total expenditure figure overestimates the value of whale shark tourism to the region. A more accurate measure of the worth of the industry to the region is the substitution value, or the amount of expenditure that would be lost to the region if whale shark tourism did not exist. The following calculation employs a modified method introduced by Stoeckl et al. (2005). The scenario questions in Table 5.3 and reproduced in Table 5.4 are used here to calculate the substitution value. The expenditure of the people who would not have visited at all if whale shark tours were not offered (Group a) would have been lost to the region and therefore the expenditure that they contribute is wholly due to the whale sharks. A portion of the expenditure of people who would have spent less time in the region if whale shark

tours were not offered (Group b) is also due to the existence of the whale shark tours. Since it is impossible to calculate this proportion with any accuracy, the expenditure of this group sets the upper and lower limit of the substitution value. The expenditure levels for these groups were calculated separately since, as noted previously, people who came to the region specifically to view whale sharks had a higher expenditure. Following this method, the substitution value has a range of **$2.4 to $4.6 million**.

Table 5.4: Substitution of expenditure to whale shark tours

Group	Number of People	Indiv. Trip Expend.	Total Expenditure
Would not have visited the region (a)	2470	$952.10	$2 351 687
Stayed less time (b)	2650	$861.30	$2 282 445
Substitution Value (a and range of b)			$2 351 687 - 4 634 132

Discussion

With regard to whale shark tourism at Ningaloo, Davis et al. found that individual expenditure per trip in 1995 for whale shark participants was $2370, which, as mentioned previously, contributed $4.7 million to the regional economy based on a tourist number of 2000 (Davis et al., 1997). A number of subsequent reports and articles have used Davis et al.'s expenditure figure by extrapolating the total visitor expenditure using updated participant numbers. These figures range from $10 million (Newman, Colman, and Medcraft, 2002) to $12 million (Fowler, 2000; Wilson, Taylor, and Pearce, 2001) and as much as $16 million (Norman, 2002). A recent management plan for the Ningaloo Marine Park also quoted a figure of $12 million (CALM, 2005). Given the widespread use of this latter figure in policy and planning documents and in the framing of other research, the figure for expenditure per participant needed to be reviewed.

A discrepancy between the Davis et al. study and this study is the measurement of participant numbers. The previous study used participant numbers from the official season only. Since 1995, participant numbers have substantially increased during the official whale shark season (Figure 3.7). In addition, the first 'complete' annual headcount was undertaken in 2006 and is employed in this study. Therefore,

although participant expenditure *per capita* in the region is lower, the total number of participants is now larger. In order to assist discussion, Table 5.5 compares the current data set with the Davis et al. data set and the 2003 results from Carlsen and Wood (2004) for all tourists to the Ningaloo region. It should be noted that whale shark participants are desirable visitors. They spend $103 more per trip than the average tourist and stay for just over half the amount of time, reducing their consumption of local resources and potentially putting less stress on the natural environment. Whale shark tourism also disproportionately attracts visitors from overseas and interstate, thus benefiting the National and State economies.

Table 5.5: Data from Three Surveys in the Ningaloo Coast Region*

Source	Davis et al.	Our Study	Carlsen & Wood
Survey Subjects	WS participant	WS participant	All tourists
Year of Data Collection	1995	2006	2003
Number	464	804	373
Expenditure per trip	$ 3,147	$ 894	$ 791
Average Stay	N/A	4.8 nights	9 days
Expenditure per day	N/A	$ 186.04	$ 87.85
Total Expenditure	$ 6.2 mil.	$ 6.0 mil.	$ 149 mil.
Av. Age	32.7	34.4	N/A
Japanese	42.3%	6.7%	N/A
West Australian	24.1%	24.0%	48.2%
Australian	34.9%	48.8%	60.7%
International	65.1%	51.2%	39.3%

* Expenditure data is adjusted to June 2006 dollars using the Australian Bureau of Statistics cost price index.

The largest discrepancy between the Davis et al. study and the findings presented here is the amount of participant expenditure per trip. There are a number of possible reasons for this discrepancy, discounting errors in data handling or calculation. One explanation is that the cost of staying on the Ningaloo coast has declined but this is highly unlikely given increases in fuel costs and accommodation costs over the last decade. Another possibility is that the decrease in the proportion of international whale shark tour participants has impacted upon the total expenditure. In particular, the most dramatic shift is seen in the percentage of Japanese tourists, from the 42.3% in 1995 to only 6.7% in 2006. Although other studies have demonstrated that international visitors to Australia spend more than domestic tourists, this was not the case amongst whale shark tour participants in 2006. Table 5.6 demonstrates that,

although international visitors spend more per night than domestic tourists, their total trip expenditure is lower. Moreover, in the early 1990s there was a concerted push by some whale shark tour operators into the Japanese market, which was perceived as being higher spending (pers. com. whale shark tour operator 2006). It is therefore feasible that this is part of the explanation for the discrepancies between the data sets.

Table 5.6: Expenditure by Origin of Whale Shark Participants

Origin	Per capita Trip Expenditure	Ave Number of Nights	Per Night Expenditure
Australian (n=240)	$922.87	5.3	$174.00
International (n=224)	$857.27	4.3	$199.06

It is likely that the decline in international participants is only part of the reason for the large drop in participant expenditure. Much more convincing is that the change in expenditure is due to a shift in the whale shark tourism market from the periphery, attracting specialists, to the mainstream, attracting generalists, amongst both domestic and international visitors Although user specialisation was not directly measured these results did include a measure of the importance of whale shark tours relative to other activities which provides an approximation of the level of user interest. More importantly the results conform with the findings on the visitor experience discussed in Chapter Four. Together both chapters display findings that are in agreement with a progression toward a greater proportion of generalists in the overall tourist body in accordance with the Duffus and Dearden (1990) model.

There is a substantial difference in expenditure between participants who would not have come to the region if it were not for the whale sharks when compared to participants who would have come to Ningaloo regardless. People who came specifically for the whale shark interaction spent over $90 per trip and over $47 per day more than others (see Table 5.3). While the Duffus and Dearden model did not consider the impact of consolidation on wildlife tourists' expenditure, recent research suggests that specialists are higher spenders than generalists (Dearden, Bennett, and Rollins, 2007), which has obvious implications for whale shark participant expenditure in the Ningaloo Coast region. The repercussion for forecasting here is that, as a wildlife tourism activity gains popularity, the individual expenditure of

tourists declines and the experience becomes more sought after by the general public.

In the case of whale shark tourism, the cost of participation has not risen noticeably from $300 in 1995. If the 1995 price is adjusted using the Australian Government Consumer Price Index the cost becomes $397, indicating that the 1995 price was inelastic. As demand has increased, operators have increased the number of participants to increase overall return, rather than increasing the cost of an individual trip which, in real terms, is much lower now than in 1995. Over the last decade whale shark tour operators have responded to growing tourist numbers by conducting more tours per season (a 44% increase between 1996 and 2005) with more people on board each tour (a 37% increase between 1996 and 2005) (Wilson et al., 2005). Competition, along with increased visitor, numbers has therefore contributed to keeping prices down. This change should be viewed in the context of a change in the profile of participants.

Conclusion

Whale shark tourists spent on average $186 per day and $894 per trip in the Ningaloo region in 2006. Whale shark tourists' expenditure in the region has been conservatively measured as $5,971,108 with a substitution value of $2.4 to $4.6 million. While this is a large contribution to the regional economy, it is significantly lower than estimates of the value of the industry based on 1995 expenditure data. The main reason for this difference appears to be a decline in individual participant expenditure in the region. The most likely explanation for this is the growth and maturation of the industry, which has now reached the consolidation stage in its development.

There is compelling evidence to suggest that the profile of whale shark tour participants has changed substantially in the eleven years between 1995 and 2006. Industry consolidation has moved the industry towards the tourist mainstream, as demonstrated through a spread of marketing through a wide range of information sources (Chapter Six) and a growing proportion of 'generalist' participants, who view whale shark tours as one of a number of features that attracted them to the

region. Another factor is the increasing popularity of the region as a destination with outstanding natural attributes more generally, as demonstrated by the displacement of fishing by snorkelling as the region's most popular activity for tourists.

Finally, the research suggests that the practice of using past data to measure wildlife tourist expenditure needs to take account of the development of the industry. Tourism is a dynamic industry which can attract different types of visitors at different stages of its development. As wildlife tourism experiences become more popular, they tend to attract more generalists who are likely to spend less than the specialists, who usually make up the majority of the first waves of tourists attracted to an experience. The increasing popularity of a region can also contribute to greater participation by generalists. Similarly, forecasting the economic impact of growth in wildlife tourism industries should also take declines in *per capita* and *per diem* expenditure into account as the profile of participants changes in conjunction with increases in participant numbers. Further research on expenditure changes due to industry growth and maturation would greatly assist managers in tourism planning and regulation.

CHAPTER SIX

MARKETING

Adapted from an article published in the journal *Current Issues in Tourism* (Catlin, Jones, Jones, Norman, and Wood In Press), this chapter continues the analysis of the survey employed in Chapter Five. In addition to the information collected on expenditure the survey gathered data on the methods by which tour participants discovered the whale shark tours on the Ningaloo coast. The dissection of this component of the research is pertinent to the discussion on maturity of the industry since it demonstrates the status and function of the methods of attracting participants to the tours. In particular it provides an insight into the state of an industry that has shifted towards a mainstream activity. In addition, the chapter also provides a pragmatic perspective of how deficiencies in whale shark tour marketing might be ameliorated.

Introduction

Viewing wildlife is a sub-sector of tourism that attracts millions of people worldwide. Although there are no reliable global figures for the number of wildlife tourists, in Australia alone, over one thousand wildlife tour operators collectively generate several billion dollars annually in revenue (Higginbottom, Rann, Moscardo, Davis, and Muloin 2001). Thus, given the scale and economic importance of this industry, it is vital that a comprehensive understanding of all the mechanisms that underpin wildlife tourism is attained. Certain aspects of wildlife tourism have been the focus of considerable research, including studies on tourism impacts on subject species; on best practice strategies for human management; and on economic valuation of the industries. By contrast, the marketing of wildlife tourism activities has been a relatively neglected research priority.

Wildlife tourism, according to Higginbottom (2004), is broadly defined as any tourist activity that has wildlife as its main focus of attraction. The size and scale of wildlife tourism enterprises vary considerably, from large zoos and aquaria, which are normally orientated towards mass tourism, to small privately-run tours that appeal to specialised wildlife tourists (Beeton 2004). The purpose of this chapter is to provide an insight into the means by which whale shark tourists at Ningaloo first learnt of this particular wildlife tourism activity.

As noted by Higginbottom and Buckley (2003), small sized wildlife tourist enterprises make up the greater part of the industry. Many of these small wildlife tourism enterprises are in remote, regional and rural areas, and this is particularly so in large and sparsely populated countries such as Australia. In addition to being physically isolated, many small wildlife tourism enterprises exist in a skills vacuum. A large number of these small businesses are staffed by personnel without previous experience in the hospitality industry or formal qualifications in business practices (McKercher and Robbins 1998). As Beeton (2004) argues, having sufficient knowledge of tourism marketing methods is essential to sustained business success, yet most wildlife tourism businesses and particularly those located in regional areas are deficient in this facet of their operations. Consequently, McKercher and Robbins

(1998) contend that their small business size, coupled with the high cost of using standard tourism advertising methods, deters such nature based tour operators from taking full advantage of more formal methods of advertising.

Not surprisingly, research from studies of wildlife tourism clearly indicate that word of mouth characteristically plays a leading role in marketing for the majority of wildlife tourism industries (Birtles, Valentine, Arnold, and Dunstan 2002; Lewis and Newsome 2003; Moscardo 2000; Warburton, Parsons, Woods-Ballard, Hughes, and Johnston 2001). However, to date, these findings have been given little attention or scrutiny. As Beeton (2004 p207) concludes in her discussion of the current state of wildlife tourism: "In relation to understanding the wildlife tourism industry further, the roles of packaging, pricing and marketing in particular need to be more thoroughly understood by all parties involved.".

These deficiencies present a number of intrinsic challenges for wildlife tourism operators seeking to run successful businesses. However, sometimes adequate skills and systems are not sufficient in themselves. A simple dearth of information in a particular area can in itself be a major barrier to the success of an operation. Consequently, the purpose of this chapter is to analyse, in detail, the different sources of information accessed by tourists to make themselves aware of whale shark tourism at Ningaloo Marine Park.

Whale sharks, the largest fish in the world, are a prominent feature in the branding of Western Australian tourism. They appear in a wide range of State level advertising that emphasises experiences with nature and, more recently, whale sharks have been included in the Australian Tourist Commission's international promotions. Ningaloo Reef is the only place in Australia where whale sharks can be reliably encountered and their annual appearance attracts visitors from around Australia and across the world to partake in swim-with whale shark experiences. As a result, whale sharks have become the basis of an entirely new tourist season locally (from April to June). As discussed in Chapter Five, this contributes substantially to the local economy which relies increasingly on tourism as a source of revenue. The 15 licenses for the operation of whale shark tours in the Marine Park, are distributed amongst a small number of tour companies. All operators run small businesses and, for many, this has

been their first experience in operating a tourism business (see Chapter Eight). Nonetheless, while some are new to the industry, others have been involved for over a decade. From a customer's perspective all operators offer a largely consistent product for a very similar price, rendering them particularly undifferentiated from each other.

Methods

To gain a better understanding of how participants first discovered the whale shark tours, it was necessary to segment the survey sample into smaller, more homogenous sets. As Hsieh (1992 p210) states "Segmentation leads to a more efficient allocation of marketing resources and a more precise setting of market objectives. It can offer significant advantages as a competitive strategy and as a guide to market planning and promotional strategies". For the purpose of this study, the whale shark participants' first source of information was the defining variable for the segments. In order to determine which segments best predicted the participant's first source of information, a function of SPSS Answer Tree—the Chi-squared Automatic Interaction Detection (CHAID) classification tree—was employed. CHAID, which was first formulated by Kass (1980 p119), "partitions the data into mutually exclusive, exhaustive subsets that best describe the dependent variable". This process allowed the best predictor variable and the best split for this variable to be determined. Whilst not overly common in tourism research, CHAID has been used for tourism market segmentation before. For instance, Diaz-Perez, Bethencourt-Cejas and Alvarez-Gonzalez (2005) segmented tourists to the Canary Islands based on their expenditure patterns.

Results

These results show the demographic and trip characteristics of all whale shark tour participants. As in Chapter Five, given the similarity in research findings between the different surveys, superfluous discussion of demographic detail is omitted since these are essentially identical to those described in Chapter Four. The whale shark tourists

surveyed came from a variety of locations throughout the world (Table 6.1). The main international sources were the United Kingdom and Ireland with a large number of mainland European participants coming from Germany. Japanese tourists accounted for the majority of participants from Asia. Australian visitors made up nearly half the sample, with close to half of these coming from Western Australia.

Table 6.1: Regions of origin for whale shark participants (n=758), showing major sub-regions

Region of Origin		Number	Percentage
Australia		**370**	**48.8**
	WA	181	23.9
	NSW	83	10.9
	Vic	57	7.5
Europe		**273**	**36.0**
	UK and Ireland	131	17.3
	Germany	64	8.4
Asia		**67**	**8.8**
	Japan	51	6.7
Other		**48**	**6.3**
Total		**758**	**100.0**

In the survey, participants were asked to nominate how they first learnt of the whale shark tours. As shown in Table 6.2, the informal means of word of mouth was the dominant source of information for all respondents. Guide books were clearly the second most used source of information. Neither the internet nor tourist information centres were major starting points for obtaining such information.

Table 6.2: First sources of information for whale shark tours

Source of Information	Number of responses[#]	Percentage
Word of mouth	331	31.9
Guide book	185	17.8
Advertisement	122	11.8
Documentary	109	10.5
Internet site	104	10.0
Local tourism office	72	6.9
Tourism WA	55	5.3
Other	60	5.8
Total	**1038**	**100**

respondents were permitted to list more than one response

The next stage of analysis of the results was to determine demographic segments using the participants' source of information as the defining variable. Figure 6.1 displays the segments created through a CHAID decision tree. A number of predictor variables covering key demographic and trip characteristics—including age, gender, length of stay, and accommodation type—were compared against the target variable 'first source of information' for a statistical significance (p<0.05) relationship using a Chi-squared calculation. Of these variables, region of origin was the best predictor of participants' source of information, and thus formed the basis for the first tier of segmentation.

Some respondents listed more than one first source of information; however, it is not possible to include multiple response sets for the target variable in a CHAID analysis. To overcome this issue, solely for the purpose of segmentation, all respondents who listed multiple responses were excluded from the segmentation process. A Chi-square analysis determined that the reduced sample was not significantly different (p>0.05) from the base sample for the variable 'region of origin'.

Word of mouth was consistently the primary source of information amongst all segments (Figure 6.1). However, there were clear distinctions between the participants from Western Australia, Interstate, and Overseas. Most noticeable was the reliance on guide books by the international participants (28.7%). Based on the survey results, people from interstate were substantially more likely to become aware of the tours through documentaries (22.8%) than were the other respondents. On the other hand, Western Australians were slightly more likely to find out through advertisements and were more likely to use the local tourism office.

International participants could be further segmented based on their country/place of origin. The survey results indicate that European tourists were more likely to source information from a guide book than were Japanese participants, but they were less likely to do so than were people from all other parts of the world. However, Japanese tourists were more likely to learn about the tours from the local tourist centre in Exmouth and advertisements, suggesting that many were not aware of the tours before they arrived in the region. Despite the existence of two major subgroups of

European participants (Table 1), namely British/Irish, and Germans, there was no significant difference ($p > 0.05$) between the sources of information accessed by these two groups.

Source (n=556)	%
Tourism WA	4.0
Local tourism office	6.1
Internet	8.8
Documentary	10.6
Advertisement	8.3
Guide book	17.8
Word of Mouth	37.1
Other	7.4
Total	**100.0**

Region of Origin
(χ^2=106.6071, *df* =14, p=0.000)

Interstate (n=127)	%
Tourism WA	8.7
Local tourism office	0.8
Internet	9.5
Documentary	22.8
Advertisement	9.5
Guide book	7.9
Word of Mouth	37.0
Other	3.9
Total	**22.8**

Western Australia (n=133)	%
Tourism WA	6.0
Local tourism office	10.5
Internet	8.3
Documentary	12.0
Advertisement	13.5
Guide book	3.0
Word of Mouth	37.6
Other	9.0
Total	**23.9**

International (n=296)	%
Tourism WA	1.0
Local tourism office	6.4
Internet	8.8
Documentary	4.7
Advertisement	5.4
Guide book	28.7
Word of Mouth	36.8
Other	8.1
Total	**53.2**

International Region
(χ^2=34.3729, *df* =14, p=0.002)

Europe (n=200)	%
Tourism WA	1.0
Local tourism office	5.0
Internet	7.5
Documentary	6.0
Advertisement	5.5
Guide book	28.0
Word of Mouth	39.5
Other	7.5
Total	**36.0**

Japan (n=40)	%
Tourism WA	0.0
Local tourism office	20.0
Internet	2.5
Documentary	2.5
Advertisement	10.0
Guide book	17.5
Word of Mouth	40.0
Other	7.5
Total	**7.2**

Rest of the World (n=56)	%
Tourism WA	1.8
Local tourism office	1.8
Internet	17.9
Documentary	1.8
Advertisement	1.8
Guide book	39.3
Word of Mouth	25.0
Other	10.7
Total	**10.1**

Figure 6.1: CHAID decision tree segmenting the predictors of first source of information

Discussion

Despite being one of the most celebrated wildlife tourism activities in Australia, it would seem that whale shark tourism at Ningaloo is largely reliant on a passive form of advertising, namely word of mouth. Furthermore, when the results were segmented according to the participants' place of origin, word of mouth was consistently the most cited source of information for all but one of the demographic segments (Figure 6.1). As this survey has established, word of mouth is fundamental to encouraging participation in whale shark tourism.

It is commonly claimed within the tourism literature (Hugo 1999; Prebensen 2005; Saleh and Karwacki 1996) that enhancing word of mouth promotion is achieved through satisfying tourists' expectations. For instance, Prebensen (2005 p27) states "The propensity to revisit a destination and to engage in positive word of mouth is dependent on satisfaction with the travel experience.". However, beyond the axiomatic acknowledgement of the need to deliver a quality product or service, there is little information regarding how word of mouth marketing can best be encouraged and built upon in the tourism industry. As Murphy (2001 p51) argues "while word of mouth promotion is consistently identified in tourism research as an important source of information used in decision making, there has been little or no research done to investigate this phenomenon in detail.".

Furthermore, it is also contended that simply satisfying tourists is insufficient in itself to generate positive word of mouth. Biyalogorsky, Eitan, and Libai (2001), Derbaix and Vanhamme (2003), and Rust and Oliver (2000) argue that, to take full advantage of word of mouth promotion, service providers must strive to have their customers' expectations exceeded, ideally reaching a state of 'customer delight'. According to Oliver, Rust, and Vakie (1997) customer delight is attained when participants' expectations have been exceeded, producing a significantly higher level of satisfaction which results in exceptional behavioural responses, such as positive word of mouth and customer loyalty.

Customer loyalty has minimal relevance for the purpose of repeat patronage on whale shark tours since repeat patronage for such 'a once in a lifetime' experience in such a remote area is very low. Even so, whale shark tours are primarily reliant on word of mouth to generate new customers from the networks of previous whale shark tourists. Most tourists would only participate in a single tour with a specific operator; thus it is unlikely that they would differentiate between their own experience and that provided by the other tour operators when they engage in word of mouth recommendation, particularly considering the lack of variety amongst the tours. Given this premise, it is important that the qualities of all the tours are maintained at a uniformly high standard if the reputation of excellence is to be upheld by the whole industry and if positive word of mouth is therefore to be exploited to its full potential.

The results presented in Chapter Four showed high satisfaction levels amongst the majority of those participating in the whale shark experience with all the local operators. However, only one third of the respondents claimed to have their expectations exceeded (Catlin, unpublished data), thus reaching the hypothesised state of customer delight which, it is argued, would be likely to generate positive word of mouth. In that respect, to maximise positive word of mouth, the whale shark tours would require that all operators exceed their participants' expectations regularly, or at least frequently.

Managing word of mouth promotion is not purely concerned with encouraging positive responses. It is also necessary that dissatisfactions are dealt with promptly and appropriately in order to minimise the generation of negative word of mouth. This is particularly pertinent for the whale shark tours considering the shift to more service focused customers (Chapter Four). Cadotte and Turgeon (1988) have shown that customers are more likely to be aware of the substandard aspects of the service experience then they are of its positive aspects. Additionally, as noted by Richins (1983), minor dissatisfactions are not likely to produce a response by the customer. As with customer delight, it is the more extreme form of dissatisfaction, on the other hand, that if not remedied, may lead to customers sharing their grievances with others (Richins 1983). Given the overwhelming reliance on word of mouth advertising, it is therefore especially important that the tour operators are aware of

and address the concerns of any seriously dissatisfied customers as promptly and effectively as possible.

Another major source of information over which the operators have minimal control is the content of guide books, which were ranked second in the most cited sources of information. International participants, in particular, tended to use guide books. A content analysis of the available guide books, which included North West Western Australia, (n=10) revealed a number of issues. In most cases the information was very positive about the whale shark tourism experience. To illustrate, one guide book read "a successful swim with a whale shark is simply the most awesome experience Australia has to offer" (Swaffer and O'Brien 2005 p260). Nevertheless, the type and depth of information provided by this selection of guide books varied from nothing at all in one case, through very brief reports (n=4), to detailed descriptions (n=5). Zillinger (2006) has demonstrated that the presentation of an attraction in a guide book was directly related to its success as a tourist attraction. The guide books generally considered most popular (i.e. Lonely Planet and Footprint) were positioned at the more detailed end of the spectrum. This could indicate either that these two guide books catered to those most likely to be interested in a whale shark experience, or that more detailed information in a wider range of guide books may stimulate greater uptake of the tours from this wider readership.

Of concern, from the analysis of the guidebooks, was the fact that many of the guides stated that the whale shark season began in March. Although the season is variable, often it will not commence until very late March, and the possibility of encountering a whale shark does not normally become high until the middle of April. Considering the brief nature of the season and the fact that the majority of tourists were found to stay in the region for less than a week (Chapter Five), it would be desirable if the guide books provided more precise dates. This would minimise the possibility of people arriving out of or on the cusp of a season and missing a whale shark sighting. In addition, although the product and price are fairly consistent across all of the operators, there is a tendency for guide books to recommend a small number of select operators in those cases where they do make recommendations. This could potentially direct the benefits accruing from the guide books to particular operators rather than for them to permeate through the industry. To achieve the representation

of a greater range of tour operators in the guide books, it is suggested that all operators actively seek guide book promotion, where possible.

Documentaries were another medium that was influential for a particular segment—Australian interstate participants. Coverage of whale shark tours through documentaries was prevalent in Australia during 2006, with the industry featuring in two popular Australian television travel shows ('Getaway' and 'The Great Outdoors'). While this happened too late in the year to influence the 2006 whale shark season, it would be expected that this extra coverage would raise awareness of the tours in the forthcoming seasons.

In addition, documentaries are seen as having been a major contributor to the disproportionate numbers of Japanese whale shark tourists a decade earlier. Surveys of whale shark tourists at Ningaloo in 1995 and 1996 found Japanese participants to be the most significant international group comprising approximately 42.3% of the tourist population (Davis et al., 1997). The results of both the surveys in this thesis which collected demographic information confirm the finding that the Japanese now only make up a small proportion of participants. Interestingly, despite the decrease in Japanese people taking part in whale shark tourism events at Ningaloo, the total number of Japanese tourists visiting Western Australia has increased over the last decade (WATC 2002). To explain this paradox, it is believed that this is at least partially the result of a particularly high level of awareness of whale shark tours in Japan a decade earlier, following the screening of a Japanese documentary on whale sharks at Ningaloo Reef produced in the early 1990s. The dramatic subsequent decrease in Japanese participant numbers highlights the fickle nature of international markets once publicity mechanisms decline, a phenomenon more directly observable in tourism related to film and television production locations. In contrast, current Japanese participants rely primarily on word of mouth to find out about the whale shark tours.

Highlighting the industry's reliance on more passive forms of publicity, the internet was seldom cited as a first source of information for any particular sample segment. This is despite the fact that the majority of whale shark tour operators have well developed internet sites. However, this finding does not mean that internet sites are

not important instruments for taking bookings and 'locking in' already informed customers. Results from other wildlife tourist studies have also found that the internet is not used widely as a source of information for the tours of this nature (Lewis and Newsome 2003; Moscardo 2000). Nevertheless, this is not always the case. For instance, for people who knew about the opportunity of swimming with minke whales on the Great Barrier Reef before they participated in that activity, the internet rated very highly (Birtles, Valentine, Arnold, and Dunstan 2002). In that regard, the internet should not be automatically discounted. Moreover, these results should serve as a reminder of the need for the industry to better harness the internet as a mechanism for promotion.

A potential method of raising the profile of a wildlife tourism industry, which has been recommended for other nature based tourism industries (see Weaver, Glenn, and Rounds 1996; Woods-Ballard, Parsons, Hughes, Velander, Ladle, and Warburton 2003), is to consolidate resources amongst operators. As noted by Weaver et al. (1996 p144) "Organised networks (horizontally and vertically integrated) may allow a group of small scale operators to achieve the critical mass of resources and attractions necessary for effective promotion to target markets". This phenomenon, referred to as co-opetition, has been widely used by airlines, especially to access hard-to-reach markets (Vander Kraats 2000, as cited in Beeton 2004). A regional tourism commission for the Ningaloo coast already promotes whale shark tours, both locally and internationally, as part of the whole regional experience. However, only four of the 15 tour operators participate in this process. McKercher and Robbins (1998) found that many nature based tour operators in Australia are dissatisfied with travel distribution networks because of their perceived high commission rates. Whether this sentiment is shared amongst the whale shark tour operators is unknown. Nevertheless, particularly given the relative lack of product differentiation, there may be some benefit in creating industry-wide and controlled whale shark tour focused promotional mechanisms. Pooling of the whale shark tour operators' marketing resources, such as for internet promotion, is especially relevant if they are to develop international markets, and in particular to regain lost ground in Japanese participation.

Conclusion

This chapter has provided an insight into a largely unexplored aspect of wildlife tourism research. The results from this research have reinforced the findings of previous wildlife tourism studies that the more informal forms of promotion prevail as a first source of information, and that whale shark tourism is no exception in this respect. Word of mouth and guide books provide most participants with their knowledge of the whale shark tours. Conversely, the more deliberate forms of advertising such as the internet and documentaries are not as yet used to their full potential by the whale shark tour industry at Ningaloo. The main barriers identified are the small business size; the high cost of official advertising; and lack of appropriate knowledge of how to exploit these methods. One result of having such a heavy reliance on word of mouth is that the industry is particularly susceptible to the consequences of service quality. In addition, this chapter has suggested other ways in which the whale shark operators might take advantage of current marketing opportunities such as the pooling of resources and the refinement of guidebook information. Finally, this chapter has shown that the novel, but pragmatic, statistical technique CHAID can be a useful tool for market segmentation. Through the process of segmentation enabled by CHAID, it has been established that tourists from different geographic regions tend to discover the whale shark tours through different media sources, an insight that requires consideration by both individual tour operators and the local tourism organisations in the marketing process.

CHAPTER SEVEN

CONSTRAINTS

So far this thesis has identified that whale shark tourism is largely a mainstream activity that predominantly sources participants who are already in the region and/or likely to find out about the tours through word of mouth. The purpose of this next chapter is to expand on these findings by looking at reasons why some people visiting this very remote region do not participate in its most iconic offering the whale shark tours. To accomplish this, tourists, both participants and non-participants, were surveyed on their perceptions of the constraints to participation in a whale shark swim-with tour. After partitioning the group into participants and non-participants the leisure constraints hierarchy concept was employed to interpret the results. Not surprisingly, it was found that differences existed between the two groups. In particular, non-participants were constrained by cost related factors while participants were more concerned with issues of quality and safety. From the perspective of the further development of the industry it is important to asses both whether and how growth in participation in whale shark tours could come from the tourists already frequenting the region.

Introduction

In any tourism market, understanding which people participate in an activity and why they do so is a worthy area of exploration. Despite the growth of wildlife tourism as a important economic and an academic field of tourism, examination of wildlife tourism markets has received only minimal attention to date (Moscardo and Saltzer 2004). Furthermore, little or no research has been conducted into why people do *not* participate in wildlife tourism activities when they visit the frequently remote sites where such activities occur. This chapter seeks to demonstrate the value of understanding the constraints to participation in a wildlife tourism activity. To achieve this for the whale shark tourism industry this chapter will apply the hierarchical model of leisure constraints, a well established model of leisure choices, in a wildlife tourism context.

Crawford and Godbery (1987) conceptualised limitations to leisure participation from a distinctly different perspective to that which had previously been conceived, forming what would serve as a foundation for many future studies on leisure constraints. While structural constraints, including time and costs, were previously the main focus of leisure research, they distinguished two other forms of constraints, which they consider to be equally important in leisure outcomes, creating three discrete categories of leisure constraints:

Intrapersonal constraints: relate to a person's state of mind, their individual psychological constitution, which interacts directly with an individual's leisure preferences. These may be their fears, anxieties, perceived physical abilities, or any perception that affects their leisure preferences;

Interpersonal constraints: relate to the effects of participation on their relationships with other people on their leisure choices. This may be a result of the presence of a spouse or travel partner with different leisure preferences;

Structural constraints: were commonly believed to be the most influential limiting factor in participation once leisure preferences were determined. These include

external factors such as a lack of financial resources, undesirable weather conditions, or a lack of time.

Not long after Crawford and Godbery had categorised leisure constraints into these three discrete groups, Crawford, Jackson, and Godbey (1991) further developed this conceptualisation into a hierarchical model (Figure 7.1). They argued that, for leisure participation to take place, a person must undertake a negotiation of all three forms of leisure constraints beginning with Intrapersonal, progressing through Interpersonal and finishing with Structural constraints. The assumption made by Crawford, Jackson, and Godbey (1991) is that those who participate in a given activity should have no more than minor concerns related to, but not necessarily be free from, all three forms of constraints. They also contend that non-participants can become overly constrained at any one stage of the hierarchy and therefore do not progress to either the next level of constraint or to participation. Consequently, progression through the hierarchy involves fewer and fewer participants at each stage. Furthermore, essential to this theory is the notion that limitations to leisure participation are negotiable constraints rather than impregnable barriers. Thus, they argue that all leisure participants experience some form of constraint, and that it is the active negotiation of these constraints that leads to full, or a modified form of participation.
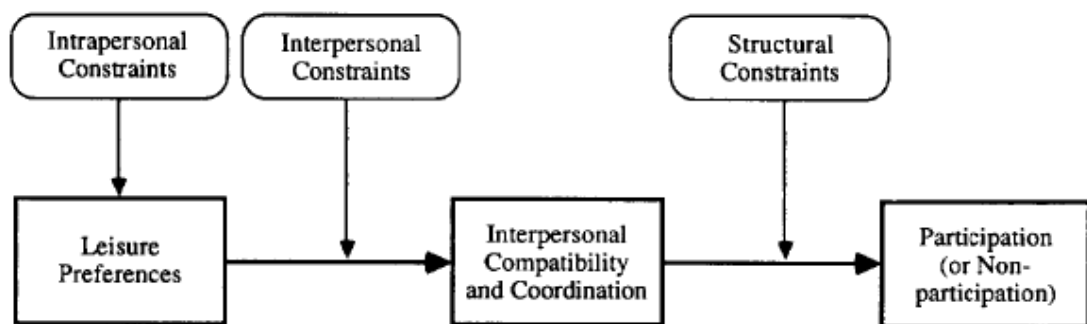
Figure 7.1: The Hierarchical Model of Leisure Constraints

Source: (Crawford et al., 1991)

A number of leisure research studies have since tested the hierarchical perspective of leisure constraints proposed by Crawford et al. (1991). As a consequence there is

general agreement that the three categories of leisure constraints proposed are an effective means of viewing the various types of constraints experienced by leisure participants (Carrol and Alexandris 1997; Hubbard and Mannell 2001; Raymore, Godbey, and Crawford 1994). On the other hand, support for the hierarchical nature of the constraints is mixed. For instance, Carrol and Alexandris (1997) and Raymone et al. (1994) found partial support while, at the two extremes Hawkins, Peng, Chih-Mou, and Eklund (1999) did not find any evidence, while Raymore, Godbey, Crawford, and von Eye (1993) found full support for the hierarchy. Although it is clear that there is some potential for greater refinement and testing of the theory, as noted by Crawford and Jackson (2005), leisure constraints theory is not generally accepted as explaining all aspects of participation in leisure activities, rather it is proposed as one perspective from which to view the factors that limit participation. It does, however, provide a robust framework from which to compare and test leisure constraints, as Jackson (2005b p10-11) states with regard to the function of the hierarchy:

> Without this combination of theoretical development and empirical investigation, leisure constraints research would still be at the stage it reached two or more decades ago – untested assumptions and guesses guiding atheoretical, empirical studies with little effort toward or concern for interpreting the findings, not only for understanding constraints and their impacts on people's lives, but even less as a contribution to enhancing the phenomenon of leisure in general.

Jackson (2005a) also stated that most constraints research is void of context, whether this be at an individual, familial or societal level. Although Jackson (2005a) focuses on demographic aspects, another important context is the setting in which the leisure activity occurs. Surprisingly, tourism is one setting that has been somewhat neglected in leisure constraints research. Most tourism is a form of leisure and, conversely, a substantial amount of leisure occurs in a tourism setting. Despite the fact that tourism is one of largest industries in world, the use of the Leisure Constraints Hierarchy in a tourism context is limited in its application (Pennington-Gray and Kerstetter 2002).

In the first discussions of the Leisure Constraints Hierarchy's relevance to tourism, Hinch and Jackson (2000) argued that it had genuine merit as a theoretical framework by which to facilitate greater understanding of tourism seasonality. They contend that the use of the hierarchy in studies of tourism seasonality will help to bridge the gap between tourism and recreation research and provide tourism seasonality research with a stronger theoretical basis whilst simultaneously giving constraints research greater empirical grounding. Their paper is centred on tourism seasonality. However, there is no reason why the relationship between tourism and leisure constraints should be limited to this application. There are many contexts in which this hierarchy concept can be used to assist tourism research, for example in the study of tourists' preferences of accommodation, attractions, and travel modes. As noted by Gilbert and Hudson (2000) there are also opportunities in tourism, through the comprehension of constraints, to identify areas where markets can be developed by expanding the customer base.

In one such tourism study, Pennington-Gray and Kerstetter (2002) applied the Leisure Constraints Hierarchy to people in the United States of America who were interested in, but could not participate in nature based tourism activities. Their results distinguished the three discrete types of constraints (i.e. intrapersonal, interpersonal, and structural) constituting the hierarchy. However, despite structural constraints being the most prominent, all three categories scored relatively similar low scores. Furthermore, even though this study sought those who were interested in travel, the participants were surveyed at their homes and consequently the research method varied little from those of the other leisure constraints studies. Employing a similar method, Nyaupane, Morais, and Graefe (2004) examined the constraints of people participating in three different nature-based tourism activities—rafting, canoeing, and horseback riding. Overall the findings from their study were consistent with the results of Pennington-Gray and Kerstetter, that is, structural constraints were the strongest and that there was also only partial support for the existence of the hierarchy. However, they did find significant differences in the types of constraints experienced in the various activities, and concluded that the influence of constraints was activity specific: "The influence of constraints appears to be highly dependant on the activity. For example, lack of information on providers is more important than money and time for horseback riding, while family commitments are more important

for rafting." (p550). Furthermore they contend that future studies within the tourism context should adopt the approach of analysing constraints on an individual activity basis, rather than the more general all encompassing approaches used in previous work.

In an earlier study Gilbert and Hudson (2000) made a direct comparison between snow skiing participants and non-participants using the same survey tool. They found that skiers scored lower on average on all three dimensions of the hierarchy. In addition, they found that non-skiers were more affected by intrapersonal constraints than were skiers. And, although participation required the conquering of intrapersonal constraints followed by structural constraints, interpersonal constraints did not appear to affect leisure participation. Nonetheless, their work provided only partial support for the hierarchy. Noticeable from these three studies, and as was the case in most other leisure constraints research studies, is the fact that all data was collected whilst people were at their homes. This method may be conducive to easier data collection, and is appropriate for certain research questions, for example, determining if people are likely to travel or not. However, on a spectrum of leisure contexts, tourism is at one extreme, since people are required to expend considerable time, money, and effort to undertake travel over long distances to reach their destinations. Accordingly, when measuring the constraints on a particular leisure choice, such as a specific activity at a specific tourist destination, it would be more appropriate to measure the constraints on site in order to accurately gauge peoples' perceptions of the specific activity, rather than of the overall travel experience if that is the goal of the study. Otherwise, researchers are relying on survey participants to speculate on which constraints they are likely to experience when they have not even overcome the initial constraints implicit in travelling.

Methods

The non-participant population from this study was sourced from tourists in the region during the whale shark tour season. Surveys were conducted concurrently on the whale shark participants (Appendix 3) and non-participants (Appendix 4) during the whale shark season months of April to June of 2007. Whale shark participants

were approached as they disembarked from whale shark tours using the same methods outlined in Chapter Four. Non-participants were contacted in the various accommodation sites located on the Ningaloo coast. Although attempts were made to cover a range of accommodation sites, ultimately the sampling method would be described as a one of convenience.

Questionnaires were designed to collect information on the socio-demographic attributes of the two populations and on the constraints perceived as inhibiting participation in a whale shark tour. A total of 13 indicators were adapted from the literature fitting into the categories of intrapersonal, interpersonal and structural constraints. Likert scales were employed to gauge the strength of each constraint, with '1' unimportant and '5' very important. A total of 132 whale shark non-participants and 576 tour participants filled in completed questionnaires. The number of questionnaires completed by tour participants was significantly greater, largely due to the ease of collecting questionnaires from tour participants at a single site. Nevertheless, the demographic compositions of both surveys were compared with those from other data collected for this thesis and also with those firm other relevant demographic information sources (Carlsen, 2004) and were not found to be significantly different. Thus, both samples are assumed to be representative of the tourist populations present on the Ningaloo coast during these months.

Results

A number of socio-demographic variables were measured for both populations. As can be seen in Table 7.1 there are several distinct differences in the composition of the participant and non-participant populations. Firstly, participants were more likely to be female, while non-participants were evenly spread between the two genders. Non-participants were also more likely to be from Australia; from an older age group; and to have a lower income.

Table 7.1: Socio-demographic Characteristics for Both Populations

Variable	Tour Participants	Non-participants
Gender	(n=576)	(n=132)
Male	40.7	48.5
Female	59.3	51.5
Region of Origin	(n=564)	(n=132)
Australia	58.7	68.9
Continental Europe	16.5	12.9
UK and Ireland	13.5	14.4
North America	4.8	0.8
Asia	4.4	0.0
Other	2.1	3.0
Age Bracket	(n=591)	(n=128)
18-25	28.4	18.0
26-35	35.1	18.8
36-50	19.0	21.1
51+	16.8	42.2
Annual Income	(n=518)	(n=109)
Less than $19,000	14.1	20.2
$19,000 - $30,000	10.0	31.2
$31,000 - $50,000	19.5	21.1
$51,000 - $75,000	22.4	13.8
$76,000 - $100,000	14.5	9.2
More than $100,000	19.5	4.6

The first step in the analysis of the constraints results was to compare the three groups of constraints—intrapersonal, interpersonal and structural—for significant differences. Considering that the Likert data did not meet requirements for using parametric inferential statistical analysis, the Mann-Whitney independent samples U-Test was employed to test for statistical significance. The Mann-Whitney test works by ranking the scores of the two populations and comparing the mean ranks. While this test does not give a mean score, it produces more reliable results than would a T-test. Furthermore the purpose of this research was to make relative comparisons between participants and non-participants, and, thus this test is appropriate for the task.

119

As can be seen in Table 7.2, all three constraints showed statistically significant (p<0.05) differences between participants and non-participants. Participants ranked intrapersonal constraints higher. These included variables covering safety; knowledge of tours; and experience quality. On the other hand, non-participants were more inclined to see interpersonal and structural constraints as being more restrictive than did the participants.

Table 7.2: Man-Whitney Test Results for Constraints

Constraint Type	Number	Mean Rank	Significance
Intrapersonal			0.00
Non-participants	94	241.6	
Tour participants	532	326.2	
Total	626		
Interpersonal			0.04
Non-participants	93	332.5	
Tour participants	506	294.0	
Total	599		
Structural			0.00
Non-participants	94	418.4	
Tour participants	538	298.7	
Total	632		

To determine which, if any, of the specific constraints were responsible for the differences seen in the constraint categories, analysis to compare individual sub-constraints was conducted. Table 7.3 displays the results from this analysis. Participants felt that they were constrained significantly more in the areas of personal safety; perceptions of overcrowding; and concern for disturbing the whale shark. Non-participants felt they were limited by the cost of the experience from both their own and their travel partner's perspective. In addition, they were constrained by the high number of locally available alternative activities.

Table 7.3: Man-Whitney Test Results for the Sub-constraints

Constraint Type	Population	Number	Mean Rank	Significance
Intrapersonal				
Worried about safety	Non-part	99	271.13	0.01*
	WS part	556	338.13	
Insufficient knowledge of tours	Non-part	97	313.87	0.581
	WS part	548	313.87	
Concerned tour is overcrowded	Non-part	95	264.30	0.01*
	WS part	543	329.16	
Don't have required swimming ability	Non-part	99	340.85	0.209
	WS part	544	318.57	
Worried they would be disturbing the animal	Non-part	100	225.86	0.00*
	WS part	544	340.27	
Interpersonal				
Don't have anyone to go with on tour	Non-part	95	320.45	0.732
	WS part	537	315.80	
Travel partner doesn't have enough money for tour	Non-part	95	368.9	0.000*
	WS part	527	301.1	
Have dependents to look after	Non-part	95	320.45	0.913
	WS part	526	315.80	
Travel partner has different interests	Non-part	97	340.8	0.438
	WS part	523	310.8	
Structural				
Don't have required equipment	Non-part	95	334.89	0.200
	WS part	543	316.81	
Too many other activities to participate in	Non-part	96	420.96	0.000*
	WS part	542	301.53	
Cost of tour is too high	Non-part	100	481.31	0.000*
	WS part	546	294.60	
Have limited amount of time	Non-part	96	296.45	0.131
	WS part	545	325.32	

* denotes statistical significance at a <0.05

Discussion

A number of variables related to the Leisure Constraints Hierarchy were presented to both participants and non-participants of whale shark tours at Ningaloo Marine Park. For most of the sub-categories no statistically significant differences were found between the two populations, suggesting that they were equally (un)important to

each group. Nonetheless, several factors did manifest statistically significant differences in the intrapersonal, interpersonal, and structural levels of constraints. The hierarchy predicts that participants should be less constrained over all three categories than non-participants. However, the results from this study show that, while participants were less constrained by interpersonal and structural constraints than their counterparts, this was not the case for intrapersonal constraints.

Placing these results into the context of the broader leisure constraints literature showed that, while there were some similarities with previous findings, there were noticeable differences. A number of the more frequently cited constraints such as a lack of time and information were not predictive of participation or non participation (Jackson 2000). This may well be due to the innate differences between leisure in a tourism context and leisure independent of tourism. While the whale shark tours last a whole day, which could be considered time consuming, it was somewhat surprising that this was not a constraining factor. This may be a result of the isolation of the area, which usually encourages participants to stay for several nights in the region (Carlsen and Wood 2004). Consequently, an extra day spent on a tour may not be perceived as a limiting factor, particularly since whale shark tours are a highlight of the region. Furthermore, non-participants are already in the vicinity of the tours and thus do not have to expend significant amounts of time travelling to and from this leisure activity. The significance of whale sharks to the region and the conspicuous signage make it near impossible not to have some knowledge of the tours, and therefore it could be predicted that both groups were familiar with the tours. On the other hand, congruent with many other leisure constraints studies (Gilbert and Hudson 2000; Jackson 2000; Pennington-Gray and Kerstetter 2002) the results from this research show that financial constraints were considered to be hindering by non-participants, and were likely to be responsible for the significant differences in the interpersonal and structural constraints.

In addition, it could be the case that structural constraints are more relevant in a tourism context than is otherwise assumed. Crawford et al. (1991) argue that the previous focus on structural constraints over intrapersonal and interpersonal constraints is ill-directed, since it is the structural aspects that are the most distal of the three, while intrapersonal constraints are likely to be the most relevant, since they

are the most immediate. This may be the case for most recreational pursuits and may be particularly relevant in the majority of leisure constraints studies which have collected data from participants in their homes, rather than in a leisure setting. Tourism presents a distinctly different situation. Studies conducted in a tourism setting, such as this research, necessitate that participants have already overcome those constraints relating to initial travel. Moreover, structural constraints, particularly financial ones, for people already travelling are far from distant or hypothetical, and are quite possibly the deciding factor, especially when it comes to choices about leisure preferences on-site. As Davies and Prentice (1995) propose, disinterest in a particular activity may be due to a rationalisation of the constraints rather than to a true lack of desire to participate. It is therefore possible that structural constraints are the overwhelming deciding factor in participation in the whale shark tours in this instance.

In support of this explanation Jackson, Crawford, and Godbey (1993), in their paper informally known as the 'Negotiation Thesis', discuss the nexus amongst the three levels of constraints, further refining and developing the Leisure Constraints Hierarchy. Particularly pertinent to this study, they propose an interaction in which structural constraints function as interpersonal constraints (Figure 7.2), they state:

> … another possible way in which antecedent constraints may be manifested is through feedback loops….whereby the expectation of encountering an interpersonal or structural constraint to participating in an activity that is assessed as being difficult or impossible to negotiate may suppress the desire to participate in that activity. In this sense the anticipation of an interpersonal or structural constraint effectively performs the function of an intrapersonal (antecedent) constraint. (p7)
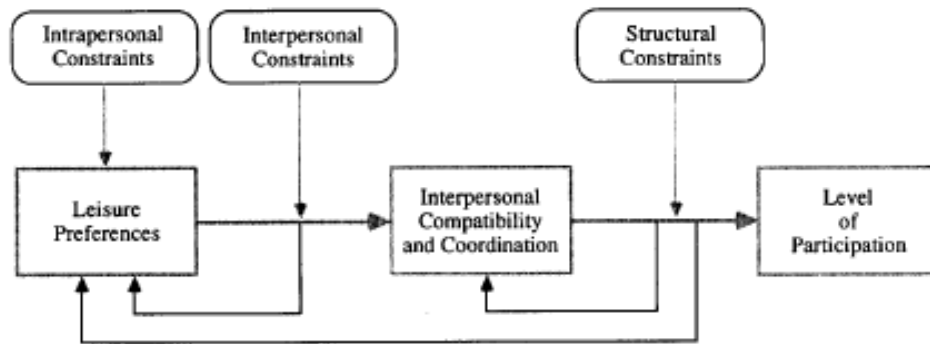
Figure 7.2: The Leisure Constraints Hierarchy featuring the interaction of structural constraints on leisure preferences.

Source: (Jackson et al., 1993 p7)

Assuming that this is the case for at least some of the non-participants in whale shark tours, the anticipation of the relatively high cost of the whale shark experience may well negate any further formation of leisure preferences, in turn blanketing the effect of any intrapersonal constraints. Conversely, if whale shark participants progress through the hierarchy, interpersonal constraints become unavoidable, and, although these do not ultimately preclude participation, participants are also inclined to consider their own safety and the safety of the whale sharks and the quality of the experience (for example the level of crowding) before undertaking the activity.

As mentioned above, financial constraints are commonly cited as the foremost structural constraints to participation, and this appears to be the major inhibitor to participation in whale shark tours. Unlike some other recreational pursuits, the extent of participation in a whale shark tour cannot be modified to save on costs. For example, golfers may limit the number of holes they play to save money. In this situation, there are only a small number of whale shark tour operators in this extremely isolated locality. In addition, they all charge very similar prices (approximately $AU350) for very similar types of tours, and it is next to impossible to encounter a whale shark without undertaking a tour. Thus it could be viewed as being to the tour operators' advantage to decrease ticket prices to increase participation. However, given the operational costs, this is likely to be uneconomical. Gilbert and Hudson (2000) recommend, as a means of increasing participation in snow skiing activities, rather then paying 'lip service' to the high cost of the sport,

124

promotions should overtly state that it is an expensive activity, but that the experience is worth the price. In support of this reasoning Lawson, Gnoth and Paulin (1995) found that the price tourists were prepared to pay for a particular activity was generally unimportant provided that people perceived that they were getting value for their money. Thus, the same recommendation could be made for the whale shark tourism industry. There are many expensive overheads implicit in undertaking a whale shark tour that people would not normally associate with a wildlife tourism activity, including hiring a spotter plane; the running costs of the boat; and providing lunch. It is these extra costs that should be overtly stated. Likewise Ningaloo Reef is one of only a few places in the world where it is possible to reliably encounter the largest fish in the world and the exclusiveness of this experience should be emphasised in any promotional material. Doing so may assist people to overcome these constraints.

Conclusion

Understanding the constraints to participation in whale shark tourism provides a useful observation that can help to elucidate the mechanisms that prohibit greater levels of participation. This is particularly pertinent to the whale shark tourism situation since most of the current population of whale shark tourists are already sourced from people visiting the region for reasons not exclusive to experiencing whale sharks. In addition to the pragmatic outcomes this research also builds on the concept of leisure constraints. The case study of whale shark tourism on the Ningaloo coast could be viewed as being an abnormal setting for testing the Leisure Constraints Hierarchy, since it exhibits characteristics that are contrary to most leisure activities previously researched in this way. That is, it requires considerable effort from participants to travel, and to stay, in a highly isolated location in order to participate in a leisure activity. Furthermore, people were surveyed while they were in the leisure environment, as opposed to collecting information from people in their homes. It is argued that this is a more representative context for specific leisure activities in tourism settings. There is definite support from these findings for the ability of the hierarchy to explain the differences in how constraints are viewed between participants and non-participants. More importantly the findings from this

research raise the question of changes in the emphasis and function of the categories of leisure constraints in different leisure settings. Although there are some noticeable differences between these findings and those in the established leisure constraints literature, the hierarchy appears to provide a sound theoretical base to guide research into participation in tourism activities.

CHAPTER EIGHT

LICENSING

This chapter uses two primary data sets to explore the significance and evolution of the licensing system employed to regulate whale shark tourism at Ningaloo Marine Park. In addition to the transition in the nature of the tourists outlined earlier in this thesis, another worthy avenue of investigation is the framework for expectations of the commercial operations. For over a decade whale shark tour operator licenses have been offered through a competitive tender process. A content analysis is used to map the changes in this process revealing that there has been a progression from one that was minimalistic to a system that covered a full range of sustainability indicators. In addition, a survey of tour operators was undertaken to better understand the challenges that they encounter in obtaining the right to participate in the industry. Results from both data sets were merged to create a complete picture of the regulatory practice of licensing. It is argued that there is a strong and converging interrelationship between tour licensing processes and the other social, economic, and environmental objectives that DEC has set for the management of the industry.

Introduction

Protected natural areas are generally managed by government agencies for mandated conservation outcomes while wildlife tourism businesses operating in these areas obviously have more commercial concerns. Thus the issue arises of what are the best means to cater for both of these requirements. Are commercial interests adequately taken into account by conservation driven government bodies and/or are tour operators sufficiently inclined to include conservation goals as part of their bottom line? Russell, Lafferty, and Loudoun (2008) suggest that these sometimes polar perspectives can generate a range of outcomes and it is often uncertain whether these are complementary or conflicting. While there is never one entirely right or wrong way to achieve this balance, it is the purpose of this chapter to explore this contention by examining the issues of environmental and economic sustainability that surround the licensing of whale shark tour operators at Ningaloo Marine Park.

External and self-regulation represent the two extremes of the different management regimes. Self-regulation clearly best represents the interests of the tour operators (Russell et al. 2008). As defined by Williams and Montanari (1999 p28) "…self-regulation involves individuals, individual agencies or partnerships taking a direct responsibility for managing their use of the environment.". Proponents of self-regulation frequently contend that this is sufficient to manage the negative environmental impacts stemming from tourism's use of the natural environment. For instance, Parson and Woods-Ballard (2003) found that, in the case of whale watching in Scotland, the rate of uptake of codes of conduct driven by tour operators was greater than that for those developed by the relevant government bodies. Consequently, they argue that a 'bottom up' approach of self-regulation by operator led organisations is more effective than a 'top down' government led approach.

The more radical perspective of self-regulation, particularly in a political context, involves the complete rejection of state intervention in any form (Williams and Montanari 1999), but this approach is not accepted by all. For instance, Williams and Montanari (1999) argue that, while there is evidence of positive outcomes of self-regulation in tourism, by itself self-regulation is insufficient for the sustainable

management of tourism entities. At the extreme of the spectrum, Dobson (2006) argues that many assume that the notion that tourism is able to self-regulate is fundamentally defective, since, he states, that tourist operators view the environment purely as a consumable. Instead, he advocates the need for external regulation. In support of this, Hughes and Carlsen (2004) note that nature based tourism enterprises are generally run as businesses to make a profit in areas managed by government conservation agencies with the primary goal of environmental conservation. It is this belief that has led to the common application of state driven regulatory frameworks for nature based tourism in protected areas.

While government agencies can help to ensure that environmental protection is for the long-term benefit of tour operations, this overall positive effect on tour operations cannot be assumed because the application of this increased environmental protection frequently means that there are greater operational costs imposed on the tour providers (Genter, Beckwith, and Annadale 2007; Huybers and Bennett 1997). In their survey of tour operators Huybers and Bennett (1997) found that the financial costs of meeting environmental regulation demands are greater for tourism than for any other major industry in Australia. In addition, the complexity of environmental regulations and the time spent in negotiating these processes were major issues confronting tour operators. Nonetheless, Huybers and Bennett (1997) determined that, overall, environmental regulation of this type had a net positive effect on operator profitability. However, they argue that a mindful approach to environmental regulation is required in order to ensure that there is a net benefit for both parties. Russell, Lafferty, and Loudoun (2008) also contend that the perceptions of regulations as either opportunities or hindrances affect the tour operators' levels of compliance. As Hughes and Carlsen (2004 p2) commented "…it would seem that government agencies and tour operators have similar objectives in relation to natural areas but the motivations may be quite different.". Obviously there is a considerable amount of convergence between the goals of tour operators and natural area managers but capitalising on this outcome is not always simple.

Mechanisms are thus needed to ensure that tour providers can both operate as successful businesses and also abide by government requirements allowing conservation goals to be met. Hughes and Carlsen (2004) argue that, for nature based

tourism to thrive, an accommodating partnership between government and business of 'landlord' and 'tenant' must be assumed. The provision of licenses allowing commercial entities to operate is one such method of achieving this relationship. According to Genter et al. (2007) licensing of nature based tour operators is a core feature of government regulation in order to provide environmental protection and other societal benefits.

As stated by Newsome, Moore and Dowling (2002 p232) "Licences allow the governing agency to monitor access and use of the areas under its control and to ensure that conservation values are maintained". In particular the allocation of licences is particularly pertinent when a single natural resource is available to a number of parties (Russell et al. 2008). Essentially licensing creates a highly controlled market environment that gives the tour operator a form of property rights over the particular resource. While the exclusivity of ownership of a licence is implicitly a competitive advantage this can be offset by the extra requirements accompanying this privilege.

Described, as an "ecologically sustainable wildlife tourism industry" (Mau 2008 p208), the iconic wildlife tourism industry of swimming with whale sharks at Ningaloo Marine Park provides an example of the use of licensing as a primary means of managing wildlife tourism activities. Tours offering the experience of swimming with whale sharks have been licensed for over a decade and a half. It is the purpose of this chapter to explore the development of the licensing process since its inception, with a particular focus on the most recent, 2009, Expression of Interest (EOI) procedures for the issuing of whale shark interaction licences. In addition, responses from a short questionnaire provided to the tour operators will be appraised and related to those issues which have been identified as most significant in the licensing processes.

Background

In Western Australia, the Department of Environment and Conservation (DEC) is responsible for managing natural areas for conservation and recreation. This includes

the issuing of tour operators licences which are required by law for private business to operate in these areas. Hughes and Carlsen (2004) reported there are roughly 340 DEC licensed tour operators in Western Australia. These licences are issued on a temporary, and sometimes competitive, basis which excludes them from accruing value and being commodified. Whale shark tour operators within Ningaloo Marine Park are subject to the licensing system of DEC. This is arguably the main mechanism by which DEC seeks to achieve its somewhat conflicting management goals for the whale shark population. DEC states that it is its primary purpose to ensure that whale sharks remain undisturbed during their time in the Marine Park (CALM 2005 p51). However, it is also the department's task to facilitate tourism interactions with whale sharks.

Licensing

Whale shark tours began at Tantabiddi, at the northern end of the Marine Park, in 1987. Not long after, the tours became regulated when 15 licences were granted in 1993. The total number of whale shark tour operators licences is still set at 15, with 14 being currently active. However, three licences are now operational in Coral Bay. Despite the maximum number of available licences currently being set at 15, the exact number of tour companies operating varies marginally each year, but this generally consists of three at Coral Bay and seven at Exmouth. The reason for this is that licences are issued to individuals rather than to companies, thus allowing tour companies to hold multiple licences. However, despite some tour companies holding several licences, it is unusual for them to run more than one vessel on any given day outside of the busier periods. They do, however, appear to meet the licence condition of conducting activities authorised under the licence to a 'reasonable extent' during the official two month season.

Although licence, and tour company, numbers have remained relatively steady since initial regulation, the duration of the licences has increased dramatically. Whale shark licences were initially granted for only 12 months, but they are now available for a period of five years with the addition of another five after a review. The licensing fee that is charged to the operators based on the number of participants they

service during the official whale shark season, a fee which is claimed by DEC to offset monitoring costs, has also changed significantly. The fee, first introduced in 1994, has steadily increased from a straight $7.00 per passenger, to $25.00 per adult and $12.50 per child in 2009.

The framework under which each operator is required to run their tour is governed by their individual licence conditions. The licence conditions are largely based on the application process for acquiring a licence. Consequently to best elucidate the underlying progression of the licensing process this analysis will focus on the Expression of Interest (EOI) application forms available at each reissuing of a licence/s. This will enable a perspective to be formed on the expectations of DEC and on the requirements placed on the tour operators. The following figures and the accompanying discussion review the application process for whale shark tourism licences for the available years (1997 to 2007). A total of four separate application forms are analysed for their content—1997, 2003, 2004, and 2009.

Figure 8.1 displays the criteria for the 1997 applications. The criteria for this application were particularly simple. Essentially, to obtain a licence the applicant required a suitable vessel; a background in tourism; local knowledge; and a commitment to operate a quality tour. While these could be viewed as a reasonably adequate overarching framework for selection, not much greater detail was provided than that outlined in Figure 8.1.

Figure 8.1: Summary of the selection criteria from the 1997 EOI

Source: (CALM 1997)

In 2003 a single licence became available for operation in Coral Bay, bringing the total at this location to three (CALM 2002). This was in keeping with the decision to restrict the total number of commercial vessels at the spatially restricted Coral Bay. Consequently, only applicants holding a Coral Bay commercial charter boat licence at the time were eligible. In addition to this limitation, the criteria for receiving a whale shark tourism licence were slightly more detailed than those provided in 1997. The most noticeable addition was the requirement for the licensee to achieve tourism accreditation with two separate bodies: the National Tourism Accreditation Program (NTAP), which focuses on the provision of a quality tourism product; and the Nature and Tourism Accreditation Program (NEAP), which provides ecotourism certification for businesses that meet best practice environmental and cultural standards. The addition of these accreditation programmes added another level of regulation by which to monitor environmental protection and product quality.

In 2004 an expression of interest arose due to the availability of an existing licence at Tantabiddi (CALM 2004c). The application process closely reflected that of a year earlier. However, there was an additional focus on the applicant's ability to produce a marketing plan:

> The marketing plan should promote the tour service and the park. It should
> also show how marketing will be directed at the retail, wholesale and inbound

133

markets. The plan should demonstrate marketing goals and strategies to achieve the above requirements, and the benefits to the applicant, local community and State from both business and social perspectives. The plan will also need to demonstrate how the business will work with the local community (including indigenous community) to maximise community benefits and a demonstrated commitment to providing services that meet universal design and access requirements that accommodate a range of disabilities should be addressed. (CALM 2004c p13)

This added focus placed greater demands on the applicant's business management skills and their ability to contribute to the local community. Furthermore, the inclusion of economic and social dimensions in the process could be viewed as an extension of DEC's standard environmentally based regulatory role over tour operators. Consequently, over the time frame from 1997-2004, it was obvious that there had been a transition towards greater detail in the application process and towards the adoption of higher standards for the operators to meet if they were to be successful in acquiring a licence. This trend was even more prominent in the most recent EOI for tours starting in 2009 (DEC 2007), which came out significantly earlier (nearly two years before licence uptake) than had been the case for previous applications.

Of the 15 licences available at the 2009 EOI only 14 were redistributed—11 in Exmouth and three in Coral Bay. One licence was retained for future allocation despite there being 22 applicants. Indicating a more stringent selection process, DEC cited the lack of suitable candidates as the reason for this decision. Interestingly, from the record of the new licensees, it is evident that at least three of the existing licence holders were unsuccessful in acquiring new licences. These included two applicants with close to a decade's experience in the industry. Moreover close to half of the licensees were new compared to those holding licences in 2005. However, of the new licences most were granted to existing tour operations; only two represented the entry of original businesses into the whale shark tour market.

The criteria for the award of licences available from 2009 represent a major evolution in the requirements expected of whale shark tour operators. DEC's position

is best summarised as "Those applicants with the best, most effective strategies for accomplishing a sustainable tourism practice during the term of the licence will be viewed favourably in the selection process" (CALM 2007 p16). The use of the term 'sustainability' in any policy document may be viewed as a vague and loose attempt to cover a multitude of variables. Nevertheless, in this case, DEC provided detailed criteria to avoid ambiguity and to create a framework for their definition of sustainable tourism. This was achieved by using previously developed sustainability indicators for nature based tourism in Western Australia and adapting them to suit the whale shark tourism context at Ningaloo. From this process nine key issues were identified by DEC, these were:

1. Sustainable equipment;

2. Environmental impact;

3. Cultural and social impacts;

4. Safety and risk management;

5. Interpretation and education;

6. Quality of service;

7. Visitor satisfaction;

8. Contribution to park management;

9. Responsible marketing. (DEC 2007)

Based on these nine issues, the weighted criteria were segmented into Applicants Attributes (15% weighting); Natural Environmental Performance (30%); Social Environmental Performance (30%); and Economic Environmental Performance (25%). The focus on natural and social environmental performance encompassed the majority of the score, collectively accounting for 60% of the weighting of the application. As further evidence of the greater emphasis given to social and environmental sustainability, applicants were not required to possess a vessel at the time of submission of their EOI, provided they could acquire one by the time the licences were issued; a conspicuous omission given the fundamentals of the business. Furthermore, as opposed to simply supplying a single sentence description, as in the

previous EOIs, these weighted criteria were sub-weighted with even more detailed objectives. An example from the two most recent applications is provided in Figure 8.2 to demonstrate the contrast between the applications.

Comparison of 2004 and 2009 Selection criterion/a

2004

Criterion 4. Demonstrated commitment to the provision of quality customer service and how you will ensure the safety and well being of your customers

2009

Criterion 3. Social Environmental Performance

Sub-criteria	Social environment performance	% weighting
3.1	Level of Indigenous ownership / employment	15
3.2	Culturally sensitive behaviour	15
3.3	Provision of interpretative material and presentations	15
3.4	Safety equipment and procedures	15
3.5	Visitor feedback	10
3.6	Content of marketing material	10
3.7	Proportion of expenditure from local businesses	5
3.8	Membership of local associations.	5
3.9	Commitment to providing services that meet universal design and access requirements that accommodate a range of disabilities.	10

Description of one sub-criterion for social environmental performance

Selection Criteria		Minimum Standard	Examples of Best Practice
Criteria 3	Social environment performance		
3.4	Safety equipment and procedures	Fully functioning emergency communication equipment. Basic search and rescue protocols in place. Staff member present with first aid training at all times. Appropriate first aid kit on site. Visitor education regarding risks. Safety induction process	Management plans for high risk activities. Contingency plans for emergency situations. All staff with current first aid training. Incident reporting protocol. At least one scenario based training event per year.

Figure 8.2: Comparison of Criteria from the 2004 and 2009 Expressions of Interest

Source: (CALM 2004c; DEC 2007)

As another example of the increased regulatory requirements, an auditing process has also been added to the regulatory framework, to determine if operators meet their goals on sustainability as outlined in the 2009 EOI. DEC proposed to have annual audits conducted by an autonomous inspector of every individual licence and vessel to assess performance against sustainability benchmarks within their licence conditions at a cost of approximately $2000 for every operator. Possibly as a response to the auditing process the number of tourism certifications was reduced from an obligatory two to a choice of either one of NEAP or NTAP.

Tour Operator Survey

To assist in obtaining a more complete perspective on the licensing process for this research, tour companies were provided with a short questionnaire (Appendix 5) after the 2007 season. Rather than attempt to elicit responses through questions explicitly regarding the licensing process, which could potentially overstate the issue, the survey took a more rounded approach. Derived from the work of McKercher and Robbins (1998) on the business practices of nature based tour operators, the questionnaire sought responses on: the background of the operators; the issues they have faced generally as a nature based tourism operator; and, more specifically, on issues that are relevant to the whale shark tourism industry at Ningaloo Marine Park. A total of six responses were received from whale shark tour business representing approximately half of the tour operators at both Exmouth and Coral Bay.

The survey found that whale shark tourism operators are primarily small businesses (employing less than 20 people) with direct involvement in daily operations by the business owners. The majority of the whale shark tour operators came from non-tourism related backgrounds. Interestingly, half of the operators were previously involved in the fishing industry. This lack of prior experience in tourism by many of the operators is common amongst small tourism firms (Page, Forer, and Lawton 1999). The length of time that the operators had been running tours varied greatly with some operators having spent only a few years in the industry and, at the other extreme, one operator with over 20 years experience.

To determine those areas where the tour operators had trouble when starting their businesses, they were asked to list the three most important pieces of advice that they could offer other nature based tour operators starting a business. Of the six respondents, five listed the provision of a quality tourism experience as the most important piece of advice. For example, responses included: 'It's all about the experience—this needs to be carefully and proactively managed' and 'providing a quality service which respects and enhances your particular natural environment's attributes'. Another common response, which was consistent with McKercher and Robbins's (1998) findings, was the ability to properly plan your business. An operator commented to 'Look closely at what you are getting into… make sure you have plenty of capital behind you and as little (or no) debt as possible'. Another reinforcing the importance of planning, stated 'have appropriate licenses, insurances, leave nothing to chance, follow all regulations'.

Thus it was obvious that the whale shark tour operators had faced similar experiences in establishing their businesses, not as just as another nature based tour business, but more generally as a small business involved in the service industry (Page et al. 1999). The next set of questions was more specific to the whale shark tour industry Firstly operators were asked 'During your time in the industry what do you believe were/are the three major issues confronting the whale shark tourism industry?' The overwhelming response to this question related to problems with other whale shark tour operators. Some of the operators were concerned with the effect that other operators were having on price and competition: 'too many operators, especially when whale shark numbers are low' and 'price wars with other operators, some undercutting, driving the price of the tour down'. One operator was more troubled by the conduct of others telling of 'many operators resisting changes within tourism, government interaction and regulation, professionalism of operations etc'. Another operator was particularly annoyed with several aspects of the operation of other tours and the perception that tour operations are highly profitable:

> People who acquire a licence and have no idea of etiquette amongst other operators. People in the industry who want to better themselves and gain

profit. They do not care what they have to do in the process even if it means using non-suitable vessels and rude staff. People are under the illusion that the operator makes a lot of money during the season. The operators who do are the ones who are not doing the right thing. I know this from experience; however, for some silly reason, I am happy to show our customers the right way to see this wondrous creature

In addition to concerns over the conduct of other operators, increased operational costs, including rising fuel prices, were mentioned by two operators as the major issues confronting them at present. Notably, when the question was rephrased to determine which issues they expected to face over the next decade, rising costs were still mentioned but were overshadowed by the fear of greater competition from increased numbers of licensees. One operator believed that there were underhand practices carried out in the licence distribution process: 'backyard operators who have no idea but have connections when it comes to obtaining a licence'. As the licensing process has progressively become more comprehensive over the last decade, it is less likely that any such practices exist. However, in defence of this comment, anecdotal observations over a number of years indicate that several one off operators have (unsuccessfully) attempted to run tours under the guise of other licence holders, essentially a type of quasi subcontracting, a process which is not permitted by their licence.

Furthermore, the fear of greater competition was extended by two operators to the addition of whale shark tourism at other locations around the world. This view is somewhat well founded since, over the last decade, other areas in the Asia Pacific region have become well known for their ability to provide whale shark interactions. In the case of Donsol, Philippines, the total number of tourists, who are predominately international, is now slightly greater than that at Ningaloo. On the other hand, Thailand, once considered a whale shark 'hot spot' has experienced major declines in encounters to the point where whale shark sightings are largely opportunistic and highly irregular (Theberge and Dearden 2006). Furthermore, with an increased portion of domestic tourists (greater than half) participating in whale shark tours at Ningaloo and most tourists claiming that they would come to the

region regardless of the presence of whale sharks (see Chapter Five), any decrease is only liable to be experienced among the international participants and its impact is therefore likely to be low.

Whale sharks are listed as a Threatened Species by the International Union for Conservation of Nature. Thus it is not surprising that half of the operators were also concerned with the conservation status of whale sharks, particularly considering that they are the resource on which their tourism product is based. Furthermore, the concern for the natural environment amongst tour operators in Australia is generally high given its perceived value to the industry (Huybers and Bennett 1997). One operator commented that 'if whale sharks are not protected from fishing numbers may dwindle'. This is a possibility, since there has been, and still is to a lesser extent, overfishing of whale sharks in a number of Asian countries (Watts 2001). Considering that whale sharks migrate to the waters of various countries and that recent evidence suggests the existence of a largely connected global population (Bradshaw 2007) it is possible that international fishing activities are impacting on the Ningaloo population. The degree to which this has affected the number of whale sharks at Ningaloo Marine Park is clouded by conflicting reports in the literature (Bradshaw, Fitzpatrick, Steinberge, Brook, Meekan 2008, Holmberg, Norman, and Arzoumanian 2009).

However, the operators' concern for the whale sharks was not extended to potential impacts caused by their own or by other whale shark tour operations. Although there is documentation of the ability of snorkelers to cause short term behaviour responses (Norman 1999, Quiros 2005), due to a lack of thorough scientific investigation there is no evidence to suggest that whale shark tours in general are negatively affecting the species. However, this implies there is also no evidence to the contrary. The absence of acknowledgement by tourism business that they themselves might negatively impact on social and natural environments appears to be endemic (Forsyth 1996). Findings from other nature based tourism studies (Finucane and Dowling 1995; Genter et al., 2007; Hughes and Carlsen 2004), have all indicated that, despite their direct reliance on the natural environment, nature based tourism operators are not likely to concede their own potential for adverse impacts. According to Genter et al. (2007), if operators dismiss the notion that they themselves or other tour operators

can negatively impact on the natural environment they are less likely to perceive the need for licensing and to view this process as a burden. In turn, this can result in conflict and non-compliance with regulatory bodies and procedures (Genter et al., 2007).

Surprisingly only one operator mentioned the lack of secure, longer term ownership of licenses as an issue, 'No security of tenure over licence. Need security to be willing to invest $$$ in business to improve plant and equipment (vessels etc) standards'. This would suggest that the current licensing situation, which effectively allows up to a decade before reapplication, is largely accepted by tour operators. It should be noted that this opinion may not be held by those who were since unsuccessful in reobtaining their licences, as the questionnaires were answered before the 2009 licences were issued. The Western Australian State Government implements the temporary licensing arrangements to restrict licences from gathering a property value and, as a consequence, possibly exposing the Government to financial risk if compensation was sought (Genter et al. 2007 and Mau 2008). A recent example of the ease with which the Government was able to reduce the number of wildlife tourism licences can be seen near to Ningaloo Marine Park. Monkey Mia is another hotspot for wildlife viewing on the mid north coast of Western Australia. The number of operators allowed to conduct dolphin viewing from a vessel in Monkey Mia was reduced from two to one on the grounds that two vessels were having a negative impact on the dolphins in the area in which they operated (Higham and Bejder 2008).

Discussion

Managing natural areas for recreational use in most, if not all, situations requires intervention to conserve the resource base on which the recreational experience is focused. In some cases this management role is best reserved for the industry that uses the resources but generally it is best served by the additional involvement of government or other regulatory bodies. A balance that meets the commercial interests and the conservation needs is more likely to be achieved via a framework that adequately covers all requirements. In the case of whale shark tourism at

Ningaloo Marine Park the situation is no different. Through a competitive process a limited number of temporary licences with implicit management directions attached are released by DEC as their primary means of managing the industry. Analysis of a decade's worth of Expression of Interest procedures has shown a progression from relatively simple requirements to a complex multifaceted process that includes components of social and economic sustainability but, ultimately, is environmentally driven. On the other hand, feedback from tour operators has revealed their fears of increased competition and rising costs but has also highlighted the lack of awareness amongst operators of their own potential to cause negative impacts on the environment. Not surprisingly striking a balance between these vested but opposing interests for whale shark tourism is a challenge.

It is evident, via the number of applicants, that demand for whale shark tourism licences is greater than supply. Thus the licensing system restricts the potential total for tour operator activity, which would undoubtedly exacerbate the concerns of the exsiting tour operators. Furthermore a lack of regulation would also likely put more pressure on the wildlife and surrounding environment via increased activity and possibly more unscrupulous tour operator behaviour as they would be without the same vested interests engendered by the licensing system. According to the Conservation Manager for DEC (Mau, 2008 p217), "The main aim of the eoi is to gain the best management and business outcome for the state." Furthermore he contends that the management of the industry "...provides a flexible and pragmatic model for implementing a conservation programme in collaboration with wildlife tourism operators." (Mau 2008 p209). Supporting this notion, one of DEC's management directives for the whale shark tourism industry is "to develop and implement a management framework that provides equitable opportunities for commercial operators to deliver a quality experience" (CALM 2004b p1). Whether or not DEC has managed to achieve this goal depends largely on the conditions they impose on the tourism operators and the more macro issue of licence numbers. Until now the number of licences effectively in operation has been restricted by both the total number available, which is determined by DEC, and the capacity of some tour companies to hold multiple licences, but not to use them to their full potential. This latter practice appears to have been continued to some degree in the latest allocation of licences.

In general DEC distributes tour licences for natural areas independent of market demand (Hughes and Carlsen 2004). Instead the perceived ability of the environment to handle pressures from tourists and tour operators is the deciding variable for DEC (Hughes and Carlsen 2004). However as Genter et al. (2007) argue, licensing decisions need to be based on science, and to be able to deal with both ecological and socio-economic goals. Furthermore, they note that the number of licences that might be considered economically sustainable can be breached while the operations may still be environmentally and socially sustainable. For instance, Genter et al. (2007) found that a number of nature based tour operators believe that the carrying capacity concept should be extended from the natural and social environments to include the market environment.

Thus the distribution of licences is an economic as well as a social and environmental question. It is clear that DEC is aware of sustainability issues for whale shark tourism beyond the environment, but whether it has adequately addressed the issue of the number of licences available is debatable. It would appear that DEC believe that 15 licences is a balanced number since this quantity has been maintained for a decade. On a basic level, the issuing of licences works to limit the number of operators which thus operates in favour of the existing licensees by reducing outside competition. However, establishing an equitable number of licences that maximises opportunities and also maintains ongoing economic sustainability is difficult. By providing too few licences DEC risk the creation of a situation where the industry is controlled by a select few and competition is minimised reducing opportunities for participants. Paradoxically, this is also potentially an outcome of the provision of too many licences, especially if this is coupled with a rise in operational costs. Increased costs and competition could lead to those operators who run on smaller profit margins becoming unviable. For example, the trend toward decreased profits amongst British tour companies has led to the domination of the market by a few large operators (Forsyth 1996). Moreover, the fact that whale shark tour operators offer essentially undifferentiated tours could also compound this problem. As Forsyth (1996) adds, it is problematic for operators to compete with each other on anything other than price when they all offer the same product.

In turn operators struggling to meet running costs are less likely to spend money in areas they regard as non-essential. McKercher and Robbins (1998) state that the two integral aspects of ecotourism are to maximise benefit to the local community and a dedication to environmental conservation. However, they also argue, that both of these aims are only possible when a business is economically sustainable (Figure 8.3 hypothesises this relationship in a reduced fashion). Consequently, McKercher and Robbins (1998 p175) state that marginal businesses are "…often marginal in all aspects of the operation." and that their ability to operate as an ecotourism business is therefore compromised. For instance, Dearden, Bennett and Rollins (2006) describe the effect of competition and price cutting on scuba diving in Phuket, Thailand:

> As the activity grows an increasing number of companies become involved for purely financial reasons, often leading to excess capacity. Fierce competition leads to cost cutting which may erode the high safety and service standards set by the original companies and lead to unwise practices…Dive companies are so intent on under-cutting each other's prices that they search for savings in all possible areas, including safety and provision of educational services. (p359)
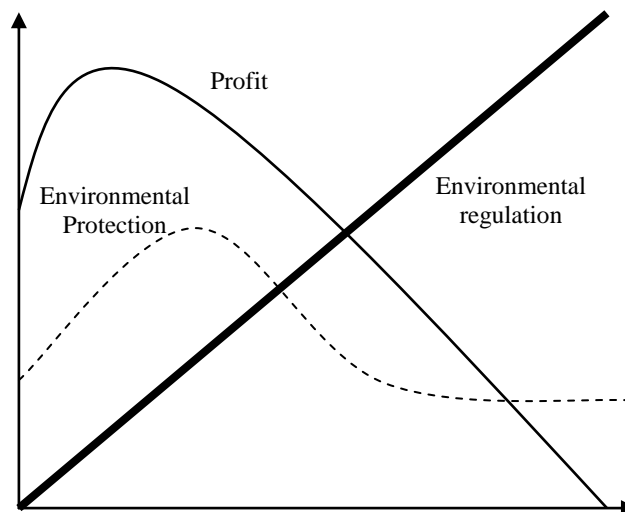
Figure 8.3: Postulated relationship between tour operator profit, environmental protection, and environmental regulation

As well as greater awareness of total licence numbers, awareness of the impacts of increased regulation is required. The licensing fee has increased dramatically since its arrival despite ticketing prices decreasing in real terms (see Chapter Five). More significant, DEC has introduced a much more vigorous and demanding framework than that which existed in the past. Consequently greater consideration is needed on the effects of these requirements on the running of a commercial operation. For instance, now that DEC has introduced its own comprehensive auditing process, the need for tourism certification as a surrogate measure of monitoring the tour operators' ability to meet their licence requirements becomes somewhat obsolete. Although DEC has reduced the number of accreditations required from two to one, this is still effectively doubling up on some areas of monitoring and could create an unnecessary workload and cost for tour operators. As discovered by Huybers and Bennett (1997) the complexity and time involved in fulfilling environmental regulations were the main concerns amongst tour operators. Hughes and Carlsen (2004) also found that the tour operators surveyed noted that inefficient and time consuming licensing processes wasted resources that could otherwise be spent on core business activities. Genter et al. (2007) observed that every added licensing requirement may be small by itself, but, in sum, they can add a significant regulatory burden. Therefore, they stress the need for accreditation programmes for tour operators to be used cautiously and to match the needs of the management agency.

Furthermore, beyond the perspective of regulation as a burden, it should also be viewed as an opportunity (Huybers and Bennett 1997; Russell et al. 2008). Tourism certification is intended to give those operators who excel at a relevant aspect a competitive advantage. Thus a mandatory requirement for operators to be accredited, to some extent, removes the incentive for operators to seek excellence and create a point of differentiation from other tours. Provided that minimum standards are being met, which the DEC auditing process is intended to ensure, the need for compulsory accreditation may be inhibiting rather than encouraging operators to take leadership roles in areas such as best practice environmental stewardship.

The perspective of regulations as opportunities is not limited to accreditation. The criticism of a lack of incentives in the licensing process of nature based tourism operators has been raised in the past (McArthur 1998). This contention is relevant to

the current licensing of whale shark tours, where the competitive process is essentially limited to the issuing of the licences. Once tour operators are awarded a licence they have to meet the obligations outlined in their application. Whilst the regulations are mostly standardised and applicable to all tour operators they are also tailored to meet the self imposed goals detailed in an individual licence holder's application. Essentially this means that some operators have higher standards to meet than others throughout their tenure, purely to maintain their licence. While this process of eliciting higher standards has merit as a method of distributing licences, it could be seen as being defective as a longer term management strategy given that the regulatory framework provides no other incentive for licence holders to excel. Instead it creates an inequitable environment where there are different standards for different operators with, paradoxically, the licence holder who successfully submitted the least demanding application receiving the least scrutiny. While it could be argued that some of the additional self imposed requirements could give the operators a competitive advantage, those standards not directly seen or experienced by participants are unlikely to have any impact on the market. Consequently, as mentioned by McArthur (1998), there could be a need to integrate incentives throughout the whole tenure of the licence.

Conclusion

In conclusion, finding the equilibrium between the conservation and recreational use of the natural environment is an ongoing endeavour for the managers of natural areas (Genter et al., 2007). Furthermore, it is expected that there will be increased visitation of natural areas in the coming years (Genter et al., 2007) making this balancing act even more precarious. It is paramount, if this is to be achieved, that natural area managers foster the sustainable use of the environment by tour operators through the implementation of considerate and appropriate regulatory frameworks. Otherwise the whole endeavour can become too process driven by focusing overly on policies that are detached from the realities of operating a business.

This chapter has looked at the use of licensing to regulate the operation of whale shark tours at Ningaloo Marine Park. From the information presented, it is clear that,

over the last decade, there has been an evolution of the Expression of Interest process, from one that was minimalistic to the most recent version which covered a full range of sustainability indicators in detail. Furthermore, the views of the whale shark tour operators reveal that they are not dissimilar in their operations from other small businesses. They have particular concerns over increased competition from other operators. Thus it is glaringly evident that there is a strong interrelationship between tour licensing processes and the other social, economic, and environmental objectives that DEC has set for the sustainable management of the industry.

CHAPTER NINE

CONCLUSION

Introduction

As highlighted at the beginning of this thesis, wildlife tourism research has often failed to make connections between theory and practice. Case studies of wildlife tourism have been undertaken enthusiastically for at least the last two decades but a clear need for greater consolidation and consistency remains. One of only a few wildlife tourism specific theoretical structures, Duffus and Dearden's (1990, Figure 9.1) wildlife tourism framework, has provided a sufficiently rounded perspective from which to view whale shark tourism at Ningaloo Marine Park. In its most basic interpretation, the Duffus and Dearden theory claims that most wildlife tourism destinations will eventually seek a mainstream market, attracting greater numbers of less specialised participants; management oversight of this change will place increasing pressure on a destination's environmental and social systems leading to their degradation. The framework has not been exhaustively tested hitherto even though the literature on which it is based provides a robust foundation for its widespread application. However, in the few instances when it has been trialled, in part and in total (Dearden, Bennett, and Rollins 2006; Higham 1998; Malcolm and Duffus 2008) its projections had been found to be accurate.
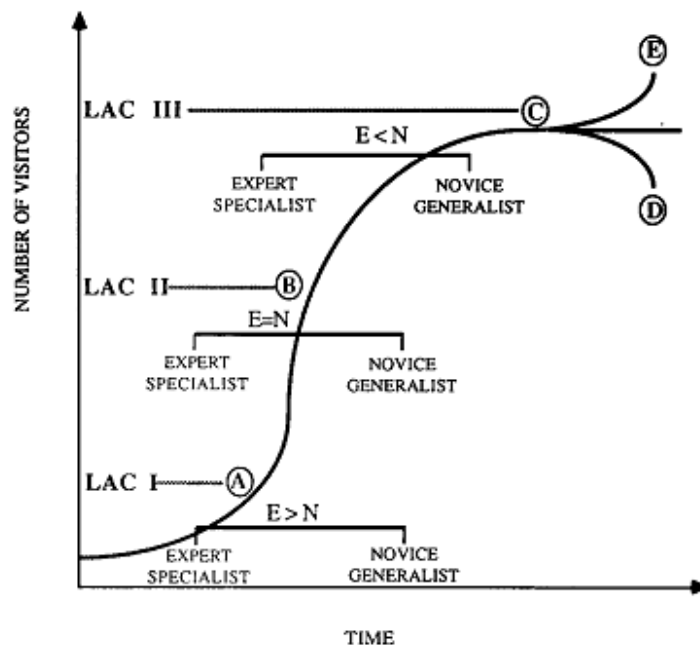
Figure 9.1: Duffus and Dearden's wildlife tourism framework, relationship between user and site evolution
Source: (Duffus and Dearden 1990)

The research undertaken at Ningaloo for this thesis indicates that whale shark tourism has undergone a relatively normal growth pattern as described by Duffus and Dearden (1990). Based on the curve extrapolated from the official visitor numbers, it is argued that whale shark tourism at Ningaloo is now in the process of consolidation having already experienced a period of exploration and rapid growth (Figure 9.2). In addition to the easily quantifiable variable of visitor numbers, support for the notion that the industry has moved towards the mainstream tourism market was also provided by the examination of the nature of the visitors and of their experiences in comparison to data collected a decade earlier. This assessment also noted that the measures put in place to manage the industry were seemingly upholding the quality of the experience and did not allow LAC II, the second benchmark of negative impact, to be breached. It would therefore appear that the stakeholders at Ningaloo have accepted the argument put forward by Duffus and Dearden (1990) that, in the absence of adequate management intervention, increased visitation would markedly and adversely change both the social and the natural environments.
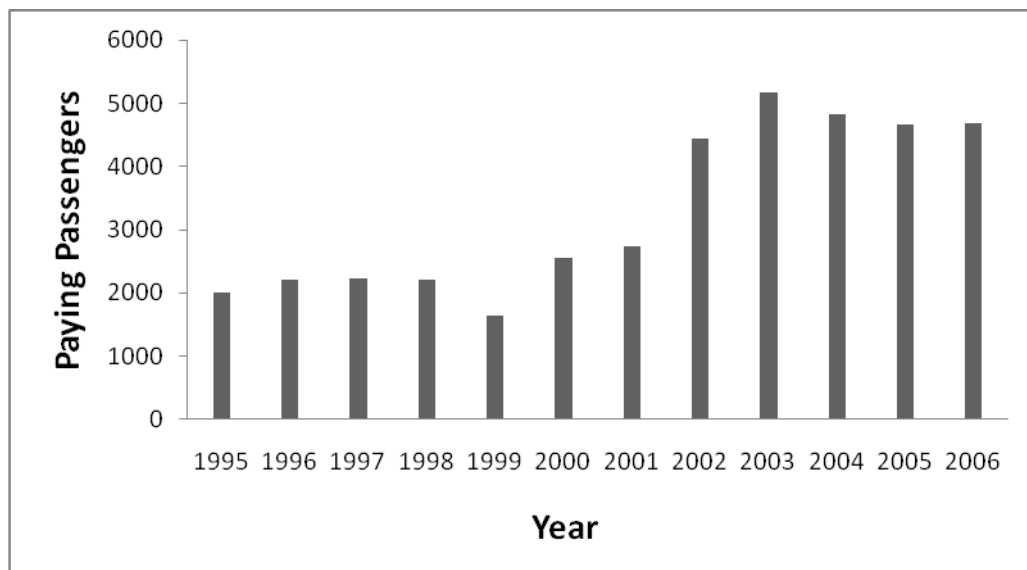
Figure 9.2: Participant numbers during the official DEC whale shark season 1995-2006
Source:(Wilson, Mau, and Hughes 2006)

Nonetheless the intent of this work was not simply to test the Duffus and Dearden model but also to develop it further by the inclusion of several additional variables that were hypothesised to be influential in the development and evolution of a wildlife tourism industry. As was argued in the literature review chapter, the

potential for the framework to operate as a valuable management tool would be greatly enhanced if it were also able to incorporate a number of additional components that influence the changes seen in wildlife tourism activity over time. The framework shares many characteristics with the more general Tourism Area Life Cycle on which it is partly based. As argued by Butler (2007):

> What was not explored in the rather brief form of the original model were the reasons for over development and the exceeding of capacity, and why actions were not taken to correct the almost inevitable subsequent decline...What is needed, it is argued, is a procedure for identifying causal factors that have shaped the pattern of development of a destination, and which may shape the continued development in the future.

Consequently, in addition to the experiential and demographic data collected, tourist expenditure patterns were also analysed. The expenditure trends identified here also supported Duffus and Dearden's (1990) assumptions and indicated additional variables which require consideration when framing both the research and the management implications of the wildlife tourism framework. Moreover, the exploration of marketing patterns and of constraints on participation also provided novel and useful insights into how the framework could be extended. From the regulatory perspective of the framework, the analysis of the licence conditions showing that the increased regulatory measures imposed on whale shark tourism operators, proved to be a valuable exercise, demonstrating that change in the LAC is not necessarily a precursor to greater regulation.

Summary of Results

The initial stage of this research involved comparing data on tourists participating in whale shark tourism in 2005 to that collected a decade earlier by Davis, Banks, Birtles, Valentine, and Cuthill (1997). These results conformed with the postulations in Duffus and Dearden's model, showing that, as the site increased in popularity, there had been a concomitant shift in the type of participants from specialists with a greater focus on the wildlife, higher levels of scuba diving qualification, and less

151

tolerance to crowding, to generalists who were more concerned with the quality of service, the peripheral recreational activities provided, and a greater tolerance to crowding. Furthermore, enforcing strict management policies on the conditions of human-whale shark interactions appears to be minimising any negative impacts on the whale sharks despite the greater absolute numbers and the growing proportion of novice participants. This longitudinal investigation provided a robust picture of the evolution of the industry and laid the foundations for the subsequent components of the research.

In addition to the experiential data collected, this thesis also examined visitor expenditure which enabled a second comparative component with the Davis et al. (1997) study. Results from the expenditure analyses further supported the notion of a shift in the market towards the mainstream. The participants' expenditure in the region in 2006 was $894 per trip, total expenditure was $6.0 million, and between $2.4 and $4.6 million would have been lost to the region if whale shark tourism did not exist. The measure of participants' expenditure is substantially lower than the calculation of $2370 per participant from the previous study of whale shark tourists using data collected in 1995. This indicated that, although whale shark participant numbers had increased substantially since the earlier study, total expenditure had remained approximately the same. Previously, many publications had used the earlier figure from 1995 coupled with more recent increased tourist numbers resulting in tourist expenditure/regional income predictions up to double the amount calculated from this research. Consequently the inadequacies of uncritically extrapolating outdated findings to forecast current and future expenditure estimates clearly highlight the value of using the refined framework as a model for predicting change (Figure 9.3).
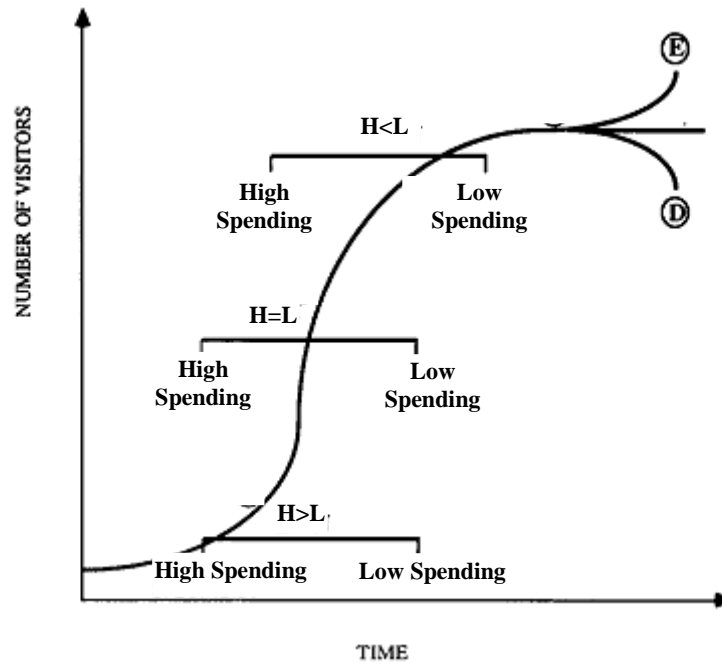
Figure 9.3: The progression of tourist expenditure through the framework

Furthermore, the economic impact of wildlife tourism, only briefly considered by Dearden et al. (2006), is a significant but largely ignored component of wildlife tourism theory. The viability of a remote area wildlife tourism business such as that at Ningaloo and of its surrounding locale is largely dependent on direct expenditure by the wildlife tourists. The nexus between economic, social, and environmental sustainability of the wildlife tourism business should not be understated. The ability of any commercial wildlife tourism operation to meet environmental and social objectives is underpinned by their own economic success (McKercher and Robbins, 1998). Moreover, efforts supporting conservation can be given much greater credibility when an economic value can be identified for a species. Thus, there is undisputable benefit in examining the impact of tourists' expenditure on the wildlife tourism attraction as it progresses through the stages of the theory proposed by Duffus and Dearden. Since a tourism site may alter its services and amenities, and attract a different clientele over time, it would be safe to assume that there would be a concomitant change in the tourists' expenditure patterns, as has occurred at Ningaloo.

As well as visitor expenditure, visitor marketing can be viewed an indicator of wildlife tourism development. As noted by Butler (1980), the nature of the tourism marketing that is undertaken is reflective of where a destination sits on the Tourist

Area Life Cycle. Furthermore an understanding of the marketing mechanisms that attract different types of tourist is important in managing and maintaining these specific markets. According to Duffus and Dearden (1990), wildlife tourism attractions will inevitably reach the maximum potential for their current market, and new markets or repeat business will therefore need to be sought. As with tourism expenditure, this facet of tourism operations has not hitherto been considered as a component of the framework. Although the marketing strategies will progress towards the mainstream in most circumstances, as has been shown to be the case for whale shark tourism, this is not a certainty for success nor is it necessarily a desired state. Whilst 'natural' marketing mechanisms such as word of mouth are largely uncontrollable, the messages of more formal marketing mechanisms are much more susceptible to direction. Furthermore, a consideration within any market is that there may be very different views amongst the various operators on what constitutes an ideal market. This problem is potentially compounded by the differing views held by stakeholders who are not directly responsible for running tours but nonetheless have vested interests, such as management bodies or accommodation providers.

This consideration does not nullify the potential for benefit in examining the marketing patterns of wildlife tourism, since the market as a whole is still a significant unit of measurement, particularly in a highly homogenous industry. In this study it was discovered that whale shark tourism is largely reliant on casual forms of marketing such as word of mouth, which was consistent with the findings of other wildlife tourism studies. As well as being indicative of the state of the industry as being in a state of maturation (Figure 9.4) this is also predictive of the possible trajectory of whale shark tourism. The fact that casual methods of advertising predominate suggests that the industry has relatively little control over the type of participants that it attracts via marketing. Given the uniform nature of the tour companies, it could be the view of the industry that it is the number and not the types of tourists that is important. However, at least from an individual expenditure standpoint, a more affluent and specialised market is desirable from the region's economic perspective. Thus, without greater intervention from the tour operators, the specialist market may become increasingly marginalised through the growth of greater numbers of general participants. Not only does this have implications for the region but also for the prospect of diversification amongst and within tour providers,

since the potential for high yielding services would diminish with a substantial homogenisation of the market (figure 9.4).
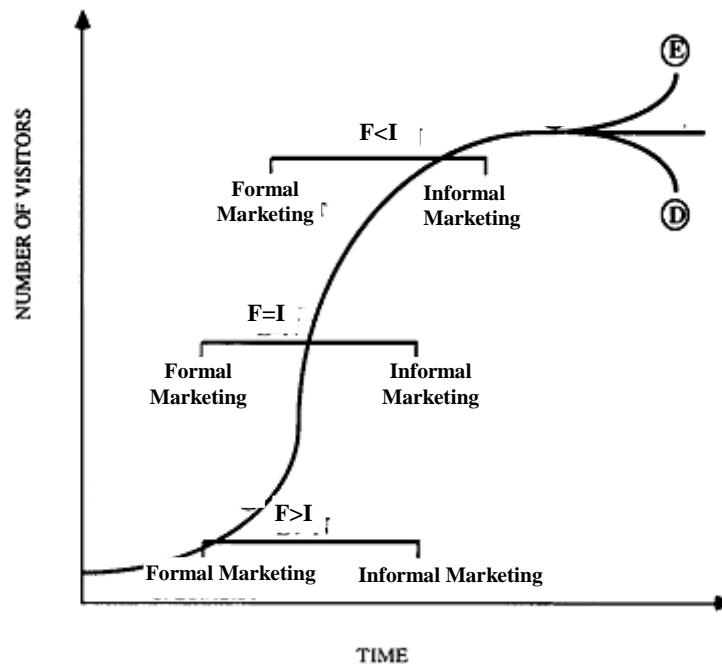
Figure 9.4: The progression of marketing through the framework

The earlier research on participants' expenditure had surprisingly shown that only 37.0% of participants would not have visited the region if not for the presence of the whale sharks. This indicated that the tourists visiting the region regardless of the whale sharks were the main source of local visitors (Figure 9.5). Another novel area of investigation in this research was on the constraints of participation in whale shark tourism. Focusing purely on the market that participates in a specific wildlife tourism activity can be limiting. Understanding the forces that motivate people to participate in an activity will enable a perspective only on those already involved. Thus complementing this area of investigation with a comprehension of the attitudes of those who do not participate but nevertheless have the opportunity to do so can produce a more complete picture of the potential market. This is especially relevant to an area such as Ningaloo coast which is very isolated and demands a substantial financial and time investment from all of its visitors. The occurrence of non-whale shark tour participants in the region is likely to be a product of the movement towards a less specialised cohort of tourists overall but it is also linked to the increased popularity of the region as a whole.

155

As the market moves towards the mainstream, logically there will be a greater number of whale shark tour nonparticipants in the region since the reason for the participants being there is less and less likely to be solely to avail themselves of the particular wildlife tourism attraction. Therefore, ascertaining the motivations of these non-participating tourists and potentially assisting them in overcoming any of their perceived or actual constraints provides the whale shark tourism industry with an opportunity to access a greater market segment. The findings from the surveys of whale shark tour participants compared to those for non-participants suggest that non-participants are very price sensitive and generally see the ticketing costs as beyond their spending ability. The relative price of whale shark tours has already decreased in real terms over the last decade and further substantial decreases are unlikely due to the high running costs involved in the tour operations. As discussed in the thesis, altering non-participants' perceptions of price is likely to be a more effective strategy than decreasing the tour fees.
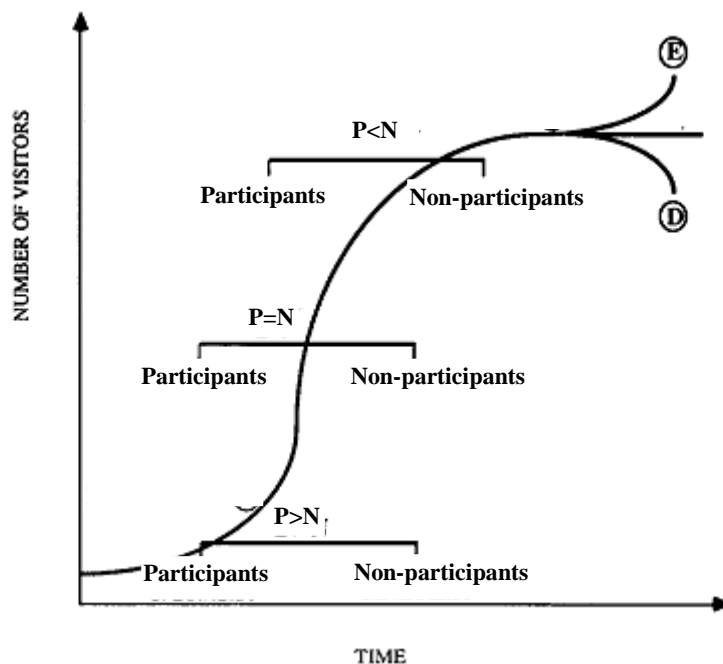
Figure 9.5: The progression of participation through the framework

The whale shark tourism licences are the fundamental management instrument employed by DEC to regulate whale shark tourism operators. Not only do they provide a ceiling for the number of businesses in operation, they also contain implicit management goals for the running of the tour operations. According to Duffus and Dearden's (1990) theory, without sufficient management intervention both the social

and natural environments will be changed and degraded. While there is evidence to suggest that whale shark tourism at Ningaloo is being managed to minimise impacts on the whale shark population, some contentious issues were identified through the analysis of whale shark tour operator licensing process. In particular a greater balance of the economic and environmental interests is now required in order to ensure that the operators are able to run a profitable business that can in turn allow them to meet the extra environmental and social obligations associated with maintaining a licence.

From the longitudinal analysis of the licence conditions it appears that, since the exploration stage of the whale shark tourism industry, there has been an incremental growth in the licence conditions, effectively increasing regulation. While this does not appear to have been an overt response to deteriorating environmental conditions, it may be due to the increased popularity and thereby increased focus on the industry. Alternatively it may be a reaction to the overall broadening of environmental regulation over this period. Nonetheless it is an important consideration in the framing of Duffus and Dearden's framework (Figure 9.6). It could be seen as paradoxical that environmental regulations will be increased without clear limits of acceptable change being breached but, even considering the broader regulatory environment, greater scrutiny resulting from increased popularity is likely to encourage this sort of response from management bodies. This is not necessarily an unconstructive response since pre-empting possible negative impacts on all levels of sustainability is important. However, as identified in this case, and as is likely to be relevant in other wildlife tourism situations, greater regulation can both directly and indirectly place extra financial and bureaucratic burdens on commercial operations. This in turn has the potential to undermine the progress of greater environmental protection since the operators may become less able to comply with all the environmental safeguards.
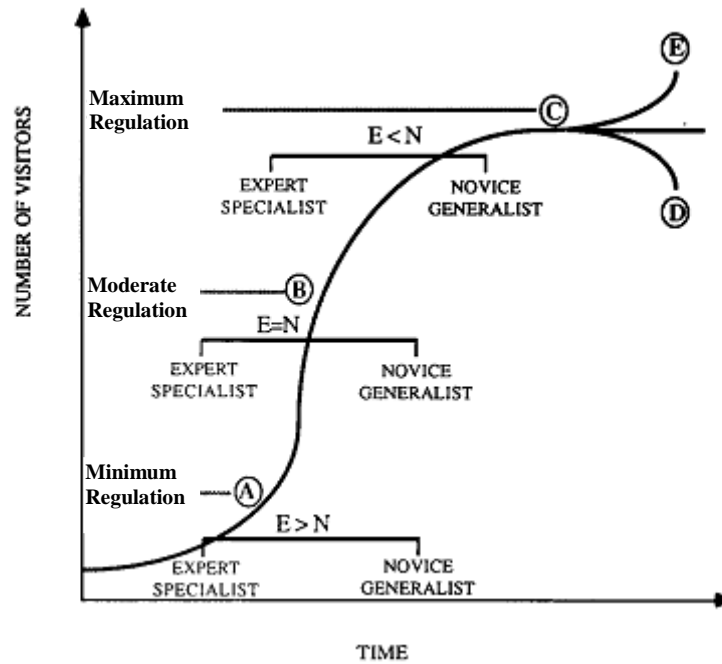
Figure 9.6: The progression of regulation through the framework

In Conclusion

Ultimately the purpose of applying the Duffus and Deardon model in a specific context is to assist in achieving a sustainable outcome for tourism development. Generally tourism development is viewed as being reflective of tourist numbers, as is superficially the case for the TALC. However, Butler (1980) did also consider a broader cohort of factors in his original conception. Measuring development purely as visitor growth would be misleading. Wildlife tourism situations have the conflicting goals of facilitating recreational needs whilst meeting conservation objectives. Essentially, successful wildlife tourism is a combination of social (e.g. public access), economic (e.g. operator profitability) and environmental (e.g. conservation objective) components.

Devising a model purely for retrospective purposes has limited value; having a model that is able to predict and prepare for change allows it to be used for directing development towards a predetermined and presumably desirable state. Therefore a model that is applicable to a wildlife tourism setting should be capable of integrating as many of the relevant variables as possible. To a large degree, the framework devised by Duffus and Dearden (1990) is predictive and encompassing. By

158

integrating two more concepts to the TALC lifecycle Duffus and Dearden's (1990) framework was able to combine information on the factors which drive change in a wildlife tourism activity. Nonetheless, as argued in this thesis, the framework can be developed further to enhance the management of wildlife tourism activities.

The aim of this thesis was to test and progress the Duffus and Dearden wildlife tourism framework. The results gathered confirmed the assumptions of the model in the case study area, essentially showing that whale shark tourism had experienced a period of growth in visitor numbers which had been accompanied by a move towards the mainstream market. This shift was proven to be associated with a decrease in average per capita expenditure, meaning that the increase in tourist numbers was not necessarily increasing total expenditure by the tourist population in the region. In addition to using expenditure as an indicator of change, it was found that measures of both non-participation and marketing were also associated with the movement of whale shark tourism away from a niche activity. Furthermore, while the regulatory mechanisms as a whole maintained a suitable recreation-conservation balance, the research also revealed that the increasing pressures exerted on the tour operators by mounting regulations, could be detrimental to both the operators and the industry in the longer term.

These findings indicate that this is an appropriate time for the industry to re-evaluate its position on the direction of development. The industry is clearly at a point of consolidation with regard to tourist numbers. Whether this current state of affairs will continue without further intervention is unknown. It is possible that the industry could go into decline with regard to tourist numbers, but this is probably not likely in the near future. Whale shark tourism is a unique and iconic tourist experience and cannot easily be substituted, at least at a local level. As other overseas whale shark tourism destinations rise in prominence this may result in less interest in Ningaloo from the international market. On the other hand, given the shift to the mainstream, the local industry is currently in a much better situation to absorb fluctuations in the international market.

However, this view may be short-sighted. Gale and Botterill (2005 p159) argue with regard to TALC that it: "...does not take into account the tourism system in its

entirety, with the result that it overlooks exogenous forces such as variations in the economic cycle of source regions and countries.". The same criticism can inevitably be levelled at the wildlife tourism framework. Greater issues such as the health of the national tourism industry and conservation of wildlife (in this case conservation of the species at a global scale), are just some of the wider issues that might have overwhelming impacts on tourist flows and wildlife viewing opportunities, and consequently on the development of this wildlife tourism industry. This is certainly the case for whale shark tourism since the development of the whale shark industry is inextricably bound up with the growth or decline in tourism in the greater Ningaloo region and even in the North West more widely. This is particularly so given the shift of the whale shark tourism market towards the mainstream. Potentially much more serious are changes in the size of the whale shark population. As noted earlier, the whale shark has been driven into a high risk conservation category by fisheries exploitation mainly located in South East Asia. It is reported that these pressures are easing from the legitimate fishers but the extent of the illegal fisheries is still mostly unknown.

Moreover the potential for impact should not seen as being limited to the more macro issues since it is possible some seemingly isolated event could send ripples through the industry. As Russel (2006) argues, using Chaos Theory, seemingly small unpredictable events can greatly shape the development of a tourist destination purely because they involve the complexity of human nature. The most obvious risk for whale shark tours would be a shark attack. The Ningaloo Reef contains all the inherent risks of snorkelling in the open ocean and thereby in the presence of marine life including some of the more potentially dangerous species such as tiger and bull sharks. While shark attacks anywhere are very rare, the media attention locally and overseas paid to a single attack is characteristically out of proportion to the actual threat. Consequently, the potential for bad publicity to be generated from a serious attack on a whale shark tour, or more broadly within the Marine Park, is enormous. History has proven that shark attacks have the capacity to cause whole city populations to cease using the ocean, even in areas far from the actual incident. While people do eventually resume their previous behaviour patterns, even if the impact from a shark attack was to disrupt just one season—a not unrealistic

assumption given the short nature of the whale shark season—it could be sufficient to severely disable a commercial operation.

While there is no doubt that these are important considerations which should be included in tourism planning processes, it is essentially the purpose of any framework to concentrate on those factors that are directly applicable to the management of the industry. As Weaver and Oppermann (2000) argue, the more external and unintentional the action, the less control that the tourism industry and its managers can exert over it. Moreover, leaving the fate of a wildlife tourism industry's development to external forces is not ideal and it is the more likely scenarios which are most controllable by the industry. For instance, as noted throughout the thesis, the industry is largely homogenous from a perspective of the services that it offers. This lack of diversity, like that of the threatened species upon which it depends, makes the industry highly vulnerable if the market on which it relies heavily becomes constrained. Furthermore, given that the industry is so deficient in variety it is likely that the various components of the local industry have a relatively high level of dependence upon each other. For instance, a fall in standards by a minority of the operators may reflect poorly on the industry as a whole since there are no major points of differentiation amongst the various brands. Consequently, one of the possible avenues of improvement that the industry could pursue, perhaps with the encouragement of DEC, is the diversification of the services available. This does not necessarily imply that a quantum change is required, but by having some operators focusing on particular market segments, such as specialists, provides more market choice and also decreases the amount of direct competition amongst the operators, a situation which can lead to price cutting and general deterioration of the experience.

Part of this shift could involve a more concerted effort to use a wider and varied range of marketing methods in order to attract visitors from more diverse sources. This proposed strategy is not intended to replace the free and effective method of encouraging participation via word of mouth but should be viewed as an adjunct to attract those who may not otherwise partake in a whale shark tour. This process could most efficiently operationalised by assisting non-participants who are already visiting the region to overcome their participation constraints. This would lessen the

need for some operators to attract new customers to a remote and relatively inaccessible location.

Closely tied into this process of competition is the system of licensing of tour operators. The new licence system has only recently been put into operation and the full ramifications of the more demanding conditions on the ability of operators to be competitive and maintain their commitments to the environment are still unknown. The number and the requirements of tour operators may need review in the future if weaknesses in the current management regime become apparent. As has been argued earlier, economic sustainability is essential to environmental conservation in this tourism context. Moreover, conservation of the whale shark species at Ningaloo is the foremost goal for DEC and is also obviously fundamental to the whole whale shark tour industry. This research has identified that the regulatory measures employed by DEC were seemingly maintaining the standards of visitor control and reducing the frequency of physical contact between the snorkelers and the wildlife. However, this was never intended to provide a complete picture of whale shark disturbance by tourism operations. There is scope to investigate this issue further. Measures such as reducing the contact time or the total number of the people in the water with the shark may need revision if disturbance of the whale sharks is seen to be occurring.

Moreover, the study has shown that the operators and the managers need to be aware of the change in expectations that occur with a change in the market. This study has shown that, as the market moved towards the mainstream, tourists' perceptions also changed. In this case the whale shark tour operators were fortunate in that the tourists' tolerance of crowding increased in line with the numbers of people on the tours. This was not a deliberate action on behalf of the operators and serendipitous adaptations such as these can definitely not be relied on in the future. Moreover, this was only one of the changes observed, and the potential for alterations in the motivations and expectations of participants is great. The intelligent anticipation of these shifts should be a focus for both the operators and the environmental managers.

Heraclitus, a Greek philosopher 600 BCE, contended that "no man ever steps in the same river twice". This notion of change is every bit as relevant to the tourism

system such that it would not be a stretch to requote Heraclitus as "the same tourist never participates in the same activity twice'. It is this perspective which has been central to this case study of wildlife tourism which has highlighted the importance of managing and planning for change in a dynamic system. The core objectives of this thesis can essentially be split into two. Firstly, the research endeavoured to provide useful empirical insights into the whale shark industry at Ningaloo that could, ideally, be of use in the management of the industry. Secondly, this goal was to be achieved in the context of the use and the development of wildlife tourism theory. Duffus and Dearden's (1990) wildlife tourism theory was chosen as the means by which to evaluate the whale shark tourism experience (i.e the perspective of the tourists) and industry (i.e. the perspective of the operators and managers).

This use of the framework proved successful in corroborating and explaining many of the changes being experienced by the whale shark tourism industry. However its use was complemented and augmented by the integration of more recent findings from the tourism literature. Consequently, the potential for the integration of new perspectives and variables, in particular the use of expenditure, marketing, participation constraints, and regulation into the framework was investigated and subsequently operationalised in the whale shark tourism context. While this research is an illustration of the increasing need for greater consolidation and reconciliation of theory and practice in the area of wildlife tourism it only represents a small step forward. Given the increase in peoples' desire to experience the natural environment, coupled with an ever more precarious conservation balance, there is a pressing need to further progress research into wildlife tourism in a theoretically informed and replicable way.

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APPENDICES

APPENDIX 1: VISITOR EXPERIENCE QUESTIONNAIRE

Section I: Information About You

1. Gender

      MALE ☐   FEMALE ☐

2. Year of Birth: 19____

3. Where do you usually live ?   TOWN_____

STATE_____

                        COUNTRY_____

POSTCODE_____

4. What is your usual occupation ?

_____

5. What formal qualifications/training/education do you have ?

      School (circle the number of years) 8 9 10 11 12

      Trade / Technical qualification   ☐

      Undergraduate degree / College   ☐

      Postgraduate   ☐

Note: Question 6 is for OVERSEAS VISITORS only.

6. Will you visit other places in Australia on this trip ?

☐   No

☐   Yes (Could you please list your other main destinations)

      _____   _____   _____

      _____   _____   _____

Section II: General Responses About Your Trip Today

7. What were the three best experiences on your whale shark trip/s ?

a. _____

b. _____

c. _____

8. Were there things that stand out as <u>detracting</u> from your enjoyment of your whale shark experience ? (If so, could you provide a brief description below)

_____

_____

_____

9. How important was each of the following to your enjoyment of the whale shark trip/s ?

(Please circle the most appropriate number for each)

- being close to nature   unimportant   1   2   3   4   5   very important

- being with friends   unimportant   1   2   3   4   5   very important

- a feeling of adventure   unimportant   1   2   3   4   5   very important

- relaxation   unimportant   1   2   3   4   5   very important

- seeing many different forms of marine life   unimportant   1   2   3   4   5   very important

- a feeling of excitement   unimportant   1   2   3   4   5   very important

- underwater scenery   unimportant   1   2   3   4   5   very important

- snorkelling somewhere new   unimportant   1   2   3   4   5   very important

- learning about the marine environment   unimportant   1   2   3   4   5   very important

- an element of risk   unimportant   1   2   3   4   5   very important

- a feeling of freedom   unimportant   1   2   3   4   5   very important

- underwater visibility   unimportant   1   2   3   4   5   very important

- being close to whale sharks   unimportant   1   2   3   4   5   very important

- seeing large animals   unimportant   1   2   3   4   5   very important

- information about whale sharks   unimportant   1   2   3   4   5   very important

10. Was there <u>anything else</u> you consider important that <u>added</u> to your enjoyment of the whale shark trip/s ?

_____

_____

11. Was the information/interpretation on whale sharks provided to you:

☐ Insufficient   ☐ About right   ☐ Too much

12. Was there any aspect of what you saw on your shark trip/s that you would like to know more about ?

_____

_____

13. How many whale sharks did you swim with on your trip ? _____

       Was this:

                Less than you expected   ☐

                About what you expected ☐

                More than you expected ☐

14. How long were you in the water with the whale sharks ? _____ minutes

     Do you think that this was:

☐ Too long   ☐ About right   ☐ Not long enough

15. After your experience (swimming with whale shark/s), how many people do you feel should be in the water with the whale shark/s at any one time ?

                                      _____
                                      people

16. How close did you get to the whale shark during your snorkelling ? _____
                                          metres

     Do you feel this was:

☐ Too close   ☐ About right   ☐ Not close enough

17. If you did touch the whale shark, was it – (tick more than one box it
                                  appropriate)

☐ an entirely accidental touch

☐ because the whale shark deliberately moved towards you

☐ your curiosity about the texture of its skin

☐ your desire to be close to the animal

☐ the excitement of touching such a large animal

☐ interference from another snorkeller

other reasons _____

18. Was your whale shark experience organized in a way that minimized the swimmers' impact on the whale sharks ?

☐ Yes   ☐ Up to a point   ☐ No

19. How much did you pay to swim with the whale sharks ? (not including accommodation, travel and other expenses)

$AU _____

20. Was this price: (please circle one number)

too low   1   2   3   4   5   **too high**

21. Had you ever snorkelled before this whale shark trip/s ?

☐ YES   ☐ NO

22. What year did you begin snorkelling ? _____

23. At what level do you rate your snorkelling ability ?
(please circle one number)

basic   1   2   3   4   5   very competent

24. Do you hold any SCUBA diving qualifications ?

☐ NO

☐ YES   (what level of qualification) _____

25. How will you describe this whale shark trip/s to your friends or family when you return home ?

_____

_____

26. Overall, how do you rate the quality: (please circle one number)

a) of your trip to the Exmouth / Coral Coast Region ?

poor   1   2   3   4   5   excellent

b) of your interaction with the whale sharks ?

poor   1   2   3   4   5   excellent

27. Overall did your whale shark interaction:

☐ Fail to meet to your expectations

☐ Meet your expectations

☐ Exceed your expectations

SECTION III: Information About Your Travel

28. How many days will you spend snorkelling with the whale sharks and diving at other locations ?

Days with whale sharks   _____

Days at other dive sites   _____

29. How much time will you spend in Exmouth on this visit ?
_____ days

30. Where are you staying at Exmouth ? (please tick one)

☐ Hotel/motel/resort   ☐ Holiday unit

☐ Camping ground   ☐ Caravan park

☐ Friends/relatives   Other (please specify) _____

APPENDIX 2: VISITOR EXPENDITURE QUESTIONNAIRE

1. How long are you staying in Exmouth/Coral Bay?   …………days

2. Where are you staying during your visit to Exmouth/Coral Bay and for how long?

Accommodation Type		Locality	No. of nights
Campsite	❏		
Caravan Park	❏		
Backpackers	❏		
Hotel/Motel (including lodge, unit, chalet, etc)	❏		
Other (please specify) …………………	❏		

3. If whale sharks tours were not available at Ningaloo Marine Park would you still have taken this trip to the Ningaloo coast (Exmouth and Coral Bay)?

Yes, we would have spent the same amount of time/number of days   ❏
at the Ningaloo coast

Yes, but we would have spent less time/fewer days at the Ningaloo coast   ❏

No, we would have travelled elsewhere   ❏

No, we would not have taken this trip at all   ❏

Don't know   ❏

4. Please assess the importance to you of the following holiday activities in Exmouth/Ningaloo, by circling a number on the 1-7 scale.

Activity	Unimportant			Neutral		Very Important	
Lying on beach	1	2	3	4	5	6	7
Swimming	1	2	3	4	5	6	7
Sightseeing	1	2	3	4	5	6	7
Snorkelling from shore	1	2	3	4	5	6	7
Diving from shore	1	2	3	4	5	6	7
Fishing from shore	1	2	3	4	5	6	7
Diving from boat	1	2	3	4	5	6	7
Snorkelling from boat	1	2	3	4	5	6	7
Fishing from boat	1	2	3	4	5	6	7
Coral viewing from boat	1	2	3	4	5	6	7
Safari / guided tours	1	2	3	4	5	6	7
Swim with whale sharks	1	2	3	4	5	6	7

5. Would you mind telling me how much you are spending/intend spending on your holiday? (If you have not finished your trip please provide estimates). Please

Expenditure Item ($AUS)	In the Exmouth/Coral Bay area	In WA travelling to Exmouth/Coral Bay
Travel (air fares, bus fares, care hire, fuel, etc)		
Accommodation		
Food and drinks: local hotels/restaurants local stores/supermarkets		
Activities (National Park fees, **whale shark tour**)		
Equipment (Purchased for your trip, eg. film, camera, snorkelling gear)		
Other (Clothing, merchandise, souvenirs, etc.)		

indicate/estimate figures for <u>the total trip</u>.

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

7. What is your normal place of residence?

………………………………….…………………………… ………………………
Country (if other than Australia)   Australian State   Post Code

8. Would you mind telling me your age and gender?
Age………..   Gender   Male   ❑
                                          Female   ❑

9. Would you mind telling me your <u>normal</u> approximate yearly household income in $AUS (including pension and unemployment benefits)?

$10,000 - $19,999   ❑ $40,000 - $49,999   ❑ $100,000 +   ❑

$20,000 - $29,999   ❑ $50,000 - $74,999   ❑

$30,000 - $39,999   ❑ $75,000 - $99,999   ❑

10. Where did you first find out about whale shark tours at Ningaloo Marine Park?

Western Australian Tourism Commission   ❑   Advertisement (magazine,tv,etc) ❑

Local tourism office   ❑   Guide book (eg. Lonely Planet)   ❑

Internet site   ❑   Friends / Word of mouth   ❑

Documentary   ❑   Other ………………………   ❑

APPENDIX 3: PARTICIPANT QUESTIONNAIRE

Demographic and Trip Characteristics

1) **Which whale shark tour operator did you go with today?**
   ....

2) **Would you mind telling me your age and gender?**

Age…………..   **Gender** ❏ Male   ❏ Female

3) **Where is your normal place of residence?**

Country ……………….   If Australia: *(please circle)*

   WA   Qld   NSW   ACT

   SA   Tas   Vic   NT

4) **What is your highest level of formal education?**

School *(circle the number of years)*	8 9 10 11 12 13
Trade / Technical qualification	❏
Undergraduate degree / College	❏
Postgraduate	❏

5) **What is the highest scuba diving certification that you have completed (or equivalent) ?**

None ❏ Open Water ❏ Advanced Rescue ❏ Dive Master ❏ Instructor ❏

Other…………….

6) **On average how often do you participate in <u>snorkelling</u> or <u>scuba</u> diving activities?**

Today is the first time ❏   Less than once a year ❏   Once a year ❏ twice a year ❏

Once every 3 months ❏   Once a month   ❏   Once a week ❏

7) Before this trip, what was your level of prior knowledge about whale sharks?

        I knew next to nothing   1   2   3   4   5   **I knew a lot**

Constraints on Participation

8) How important were the following statements in your decision to participate in a whale shark tour?
(please circle)

a)	I was worried about my safety	**Not important**	1	2	3	4	5	**Very Important**
b)	My travel partner has different interests	**Not important**	1	2	3	4	5	**Very Important**
c)	I didn't know enough about it	**Not important**	1	2	3	4	5	**Very Important**
d)	I heard that the experience was too crowded	**Not important**	1	2	3	4	5	**Very Important**
e)	I don't have the required swimming ability	**Not important**	1	2	3	4	5	**Very Important**
f)	I didn't have anyone to go with	**Not important**	1	2	3	4	5	**Very Important**
g)	I was worried that I would be disturbing the whale sharks	**Not important**	1	2	3	4	5	**Very Important**
h)	I have dependants (eg children) to look after	**Not important**	1	2	3	4	5	**Very Important**
i)	I didn't have the required equipment	**Not important**	1	2	3	4	5	**Very Important**
j)	My travel partner doesn't have enough money	**Not important**	1	2	3	4	5	**Very Important**
k)	Too many other activities to participate in	**Not important**	1	2	3	4	5	**Very Important**
l)	I have a limited amount of time	**Not important**	1	2	3	4	5	**Very Important**
m)	The cost of the tour is too high	**Not important**	1	2	3	4	5	**Very Important**
n)	I am afraid of whale sharks	**Not important**	1	2	3	4	5	**Very Important**
o)	The activity is too physically demanding	**Not important**	1	2	3	4	5	**Very Important**
p)	I get sea sick easily	**Not important**	1	2	3	4	5	**Very Important**

APPENDIX 4: NON-PARTICIPANT QUESTIONNAIRE

Do you plan on participating in a whale shark tour whilst on the Ningaloo Coast *(Exmouth to Coral Bay)*?

❏ No, I wasn't aware of the whale shark tours
❏ No, I wasn't intending on participating in a whale shark tour

2) Would you mind telling me your age and gender?

Age…………..

Gender   Male   Female
             ❏   ❏

3) Where is your normal place of residence?

Country …………………   If Australia: *(please circle)*   WA   Qld   NSW
ACT

                                                          SA   Tas   Vic

NT

4) What is your highest level of formal education?

School *(please circle)*   8 9 10 11 12 13   ❏
Trade / Technical qualification   ❏
Undergraduate degree / College   ❏
Postgraduate   ❏

5) Could you please tell me your normal average annual income (before tax and in $AU)?

Less than 19,000   ❏   19,000 - 30,000   ❏   31,000 - 50,000   ❏

51,000 - 75,0000   ❏   76,000 - 100,000 ❏   Greater than   ❏
100,000

6) How many people are you travelling with whilst on the Ningaloo Coast?

Adults..
Children (*under 18*)....................

7) How many nights in total are you spending on the Ningaloo Coast?

…………

8) Could you please tell me the type and the name/location of the accommodation where you will spend   the majority of your time whilst on the Ningaloo Coast?

Location/Name   *Location/Name*

Hotel/motel/resort …………….................◻   Holiday unit …..……………………….◻

Caravan park……………………………….◻   Friends/relatives...………….............◻

Backpackers ….………………….…........◻   Camping ground…………………….◻

Other *(please specify)*………………………

9) Please list the main <u>recreational activities</u> that you have, or plan to, participate in whilst on the Ningaloo Coast

I)………………………………………………………………………………………………….....

II)……………………………………………………………………………………………………

III)………………………………………………………………………………………………….

IV)………………………………………………………………………………………………

V)……………………………………………………………………………………………………

10) If you do not plan on participating in a whale shark tour, could you please tell me what factors were most influential in your decision?

……………………………………………………………….……………………………………

……………………………………………………………….……………………………………

……………………………………………………………….……………………………………

……………………………………………………………….……………………………………

11) How important are the following statements in your decision to not participate in a whale shark tour: *(please circle)*

a) I am worried about my safety — **Not important** 1 2 3 4 5 **Very Important**

b) My travel partner has different interests — **Not important** 1 2 3 4 5 **Very Important**

c) I don't know enough about it — **Not important** 1 2 3 4 5 **Very Important**

d) I heard that the experience was too crowded — **Not important** 1 2 3 4 5 **Very Important**

e) I don't have the required swimming ability — **Not important** 1 2 3 4 5 **Very Important**

f) I don't have anyone to go with — **Not important** 1 2 3 4 5 **Very Important**

g) I was worried that I would be disturbing the whale sharks — **Not important** 1 2 3 4 5 **Very Important**

h) I have dependants (eg children) to look after — **Not important** 1 2 3 4 5 **Very Important**

i) I don't have the required equipment — **Not important** 1 2 3 4 5 **Very Important**

j) My travel partner doesn't have enough money — **Not important** 1 2 3 4 5 **Very Important**

k) Too many other activities to participate in — **Not important** 1 2 3 4 5 **Very Important**

l) I have a limited amount of time — **Not important** 1 2 3 4 5 **Very Important**

m) The cost of the tour is too high — **Not important** 1 2 3 4 5 **Very Important**

n) I am afraid of whale sharks — **Not important** 1 2 3 4 5 **Very Important**

o) The activity is too physically demanding — **Not important** 1 2 3 4 5 **Very Important**

p) I get sea sick easily — **Not important** 1 2 3 4 5 **Very Important**

12) Only if the price of the tour is a major constraint on your participation, could you please circle the maximum amount that you would be willing to pay to participate in a whale shark tour ($AU)

Less than $100 $100-150 $151-200 $201-250 $251-300
over $300

APPENDIX 5: TOUR OPERATOR QUESTIONNAIRE

1) I operate/d a whale shark tourism business from   19……….to …………

2) Before I entered the whale shark tourism industry, I worked in the……………business area

3) From your experiences could you please list the three most important pieces of advice that you   would offer other nature based tour operators hoping to start a business

   a) ....
....

   b) ....
....

   c) ....
....

4) How many workers do you employ during the whale shark season related to tour operations?

   Fulltime   …………….

   Part-time ……………

5) During <u>your time </u>in the industry what do you believe were/are the three major issues confronting the whale shark tourism industry?

   a) ....
....

   b) ....
....

   c) ....
....

6) What do you see as the three major issues confronting whale shark tourism within the next 10 years?

a) ....

....

b) ....

....

c) ....