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# Towards Sustainability of Marine Wildlife-Watching Tourism in Namibia



by  
Ruth H. Leeney

## Abstract

Tourism is important to the economy of coastal towns in Namibia, but lack of regulation in the marine tourism sector has the potential to have negative long-term impacts. For the first time, the extent and activities of marine wildlife-watching tourism (MWWT) throughout Namibia are documented. Data on MWWT in Walvis Bay, where the industry is most developed, were collected via interviews. 11 companies offered tours in 2010, providing the

equivalent of at least 80 full-time, year-round jobs and direct revenue of over N\$ 30 million. A voluntary Code of Conduct has been in place for several years but is not adhered to and cetaceans are frequently exposed to close approaches by vessels, raising concerns for the sustainability of the industry.

Der Tourismus ist ein wichtiger Wirtschaftsfaktor für die namibischen Küstenorte, birgt jedoch Potential für negative Langzeitfolgen aufgrund mangelnder Regulierung im Bereich der Seetouristik. Erstmals werden nun Ausmaß und Aktivitäten der touristischen Meerestierbeobachtung namibiaweit dokumentiert. Daten zur touristischen Meerestierbeobachtung in Walvis Bay, wo die Entwicklung dieser Branche am weitesten fortgeschritten ist, wurden durch Befragungen gesammelt. Im Jahr 2010 boten elf Unternehmen Touren an, wodurch umgerechnet achtzig ganzjährige Vollzeit-Arbeitsplätze entstanden und ein Direktumsatz von über 30 Millionen NAD erwirtschaftet wurde. Seit einigen Jahren gibt es einen freiwilligen Verhaltenskodex, der jedoch nicht eingehalten wird. Häufig fahren Schiffe allzu nahe an Wale heran, was Bedenken hinsichtlich der Nachhaltigkeit der Branche aufkommen lässt.

**Keywords:** Sustainable tourism; Code of Conduct; whale; dolphin; Cape fur seal; Walvis Bay; Cape Cross

## Introduction

The presence of the arid Namib desert, which extends along the entire Namibian coastline and, in places, reaches hundreds of kilometres inland, makes Namibia one of the least densely populated countries in the world (2.3 million inhabitants in a country of 824,000 km<sup>2</sup>). Tourism is second only to mining in its importance to the Namibian economy; its value has increased by 8-10% per year over the past decade (Mendelsohn et al. 2010) and now contributes at least 14% to the GDP. Many tourists visit for the terrestrial landscapes and wildlife, particularly in the national parks across the country, but Namibia's coasts and marine life, while less renowned, are equally impressive. The number of international tourists visiting the coast was estimated at 422,000 in 2007, almost half of the total number of visitors to Namibia in that year (Robertson et al. 2012). Tourism on the coast contributed an estimated N\$1,300 m to the Gross National Income in 2006, and an estimated 8,264 people were employed in the tourism industry in 2007 (Alberts & Barnes 2007). The towns of Walvis Bay and Swakopmund are the primary focuses of tourism along the coast, since much of the remaining coastline is inaccessible to most visitors.

**Cover photo:** Cape fur seal pup next to the walkway at Cape Cross

Photo: Ruth Leeney

A marine wildlife-watching tourism (MWWT) industry has developed on Namibia's coast in the past two decades, and from small beginnings, has become a significant contributor to the economy of the coast. Tourism which focuses on marine wildlife has experienced considerable growth worldwide in recent decades, and has also become the focus of a growing number of studies examining the effects of such activities on the marine environment and in particular, on the focal animals (e.g. Bejder & Samuels 2003; Higham 1998; Laroche et al. 2007; Villanueva et al. 2012; Waayers et al. 2006). This tourism sector includes activities such as whale-watching and 'swim-with' tours which usually focus on large species such as dolphins, whales, seals, manta rays, manatees and sharks (e.g. Anderson et al. 2010; Curtin et al. 2009; King & Heinen 2004; Mangott et al. 2011; Parsons 2012; Quiros 2007). These types of tourism can be seen as both beneficial for, and potentially detrimental to, marine ecosystems and species. If MWWT replaces consumptive use (such as shark finning, whaling and dolphin fisheries), it provides a less destructive 'use' of marine wildlife, which should in theory be more sustainable. However, marine wildlife-watching can also have negative impacts on marine species that are otherwise not used to regular interactions with humans and their vessels (Parsons 2012).

This paper summarises the state of the MWWT industry in Namibia, bringing together data and observations collected on the Walvis Bay MWWT industry in 2008, 2010 and 2012. The benefits of this industry to Namibia's local and national economy are discussed, as well as concerns regarding the growth of the industry at one site and the lack of regulation. Based on the structure and management of MWWT sectors worldwide, recommendations are made for the development of a more sustainable and well-managed industry.

## The study

### 1. A summary of Marine Wildlife-Watching Tourism in Namibia

Namibia's coastline spans 1,570 km, from the mouth of the Orange River in the south to the Kunene River mouth in the north. The cold Benguela current promotes high productivity along this coast, which in turn supports a wealth of larger marine vertebrates. Cape fur seals (*Arctocephalus pusillus pusillus*) occur in abundance (Crawford et al. 1989; Kirkman et al. 2012). A diverse array of cetacean species can be encountered in Namibian waters; these include bottlenose dolphins (*Tursiops truncatus*), Heaviside's dolphins (*Cephalorhynchus heavisidii*), dusky dolphins (*Lagenorhynchis acutus*), killer whales (*Orcinus orca*), pilot whales (*Globicephalus* sp.), southern right whale dolphins (*Lissodelphis peronii*), humpback whales (*Megaptera novaeangliae*), southern right whales (*Eubalaena australis*), pygmy right whales (*Caperea marginata*) and minke whales (*Balaenoptera bonaerensis*) (Barendse et al. 2011; Best 2007; Elwen et al. 2011; Findlay et al. 1992; Leeney et al. 2011; Leeney et

al. 2013). In addition, leatherback turtles (*Dermochelys coriacea*) and ocean sunfish (*Mola mola*) are seasonally abundant (Elwen & Leeney 2011; R.H. Leeney pers. obs.). MWWT occurs primarily at three sites in Namibia: Cape Cross, Walvis Bay and Lüderitz (Fig. 1).

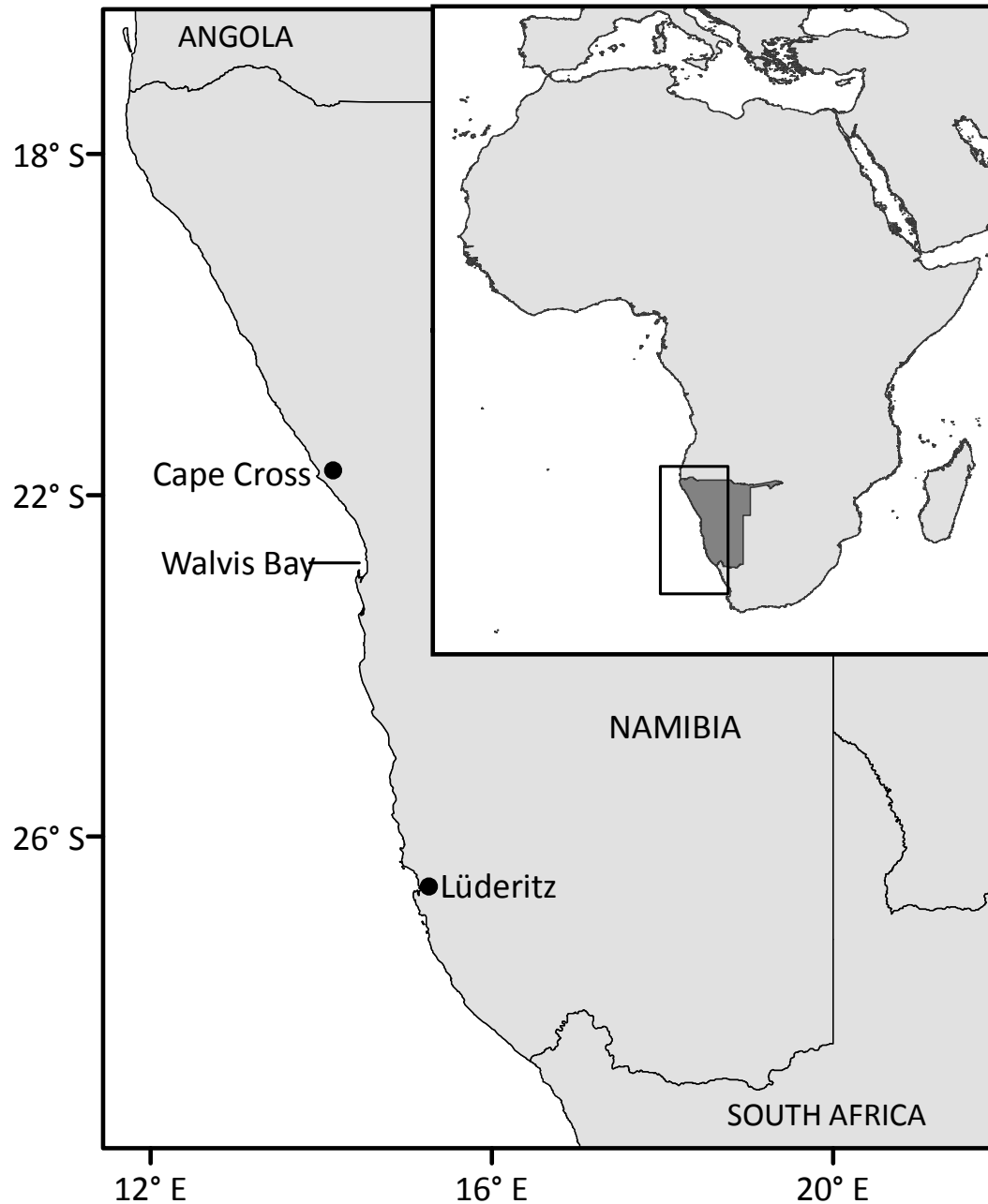


Figure 1: Map of the study area showing the locations of Cape Cross, Walvis Bay and Lüderitz on the coast. Inset map shows Namibia's location in southern Africa.

### Cape Cross

The Cape Cross Seal Reserve was established in 1968 to protect the largest mainland breeding colony of Cape fur seals in the world. Namibia's Cape fur seal population was estimated at 770,000 in 2007, of which a significant proportion breeds at Cape Cross (Robertson et al. 2012). MWWT here involves land-based seal watching. A 200-m enclosed walkway, constructed from recycled plastic, allows visitors to walk around the landward side of the seal colony and observe the seals. Many seals lie in the shade under the walkway or against its frame, and thus visitors are afforded very close encounters. There are interpretive boards attached at points along the walkway, providing information on seal biology and ecology. Entrance to Cape Cross Seal Reserve is N\$ 10 per person. 49,811 tourists (including Namibians) and 13,349 vehicles (light vehicles, buses and trucks) were documented as entering Cape Cross Seal Reserve in 2011 (M. LeRoux, Ministry of Environment & Tourism, pers. comm.), resulting in at least N\$ 500,000 (~€ 42,800; based on conversion rate of N\$ 1 = €0.0856, 14 April 2013) in revenue. Cape Cross Seal Reserve is also one of the key sites for seal harvesting (Dekker & de Jong 1998; Robertson et al. 2012; Wickens et al. 1991). Sealing has occurred in southern Africa since at least the 17<sup>th</sup> century but the seal harvest in Namibia has recently become a contentious issue, with support from the fishing industry but objections from animal rights groups (Hartman 2013). Almost 35,000 seals were harvested in Namibia in 2007 (Robertson et al. 2012).



The Cape fur seal colony at Cape Cross

Photo: Ruth Leeney

### *Walvis Bay*

Walvis Bay is the most protected natural harbour along the Namibian coast, and is the primary site for MWWT in Namibia. The bay is approximately 10 km by 10 km in size, and is currently the base for seven companies operating at least 23 motorised boats (R. Leeney pers. obs. January 2013). Tours are run daily between 08:30 and 13:00 and focus on feeding pelicans, visiting the seal colonies on Pelican Point and encountering cetaceans and other marine life in the bay. The most commonly-encountered species are bottlenose dolphins, which are resident year-round in the bay, and Heaviside's dolphins, which can reliably be found at Pelican Point in most months of the year (Elwen et al. in prep.; Leeney et al. 2011). During the austral winter, humpback whales and southern right whales can be encountered, and during the summer (January-March), leatherback turtles and ocean sunfish are often observed. In addition to the motorised vessels (ski-boats and sailing catamarans), three companies offer kayaking activities around Pelican Point, providing opportunities to observe the seal colonies, frequent aggregations of flamingos and seabirds, and dolphins.



*Tourists watch a leaping bottlenose dolphin in Walvis Bay*

*Photo: Ruth Leeney*

### *Lüderitz*

In Lüderitz, a boat-based MWWT industry also occurs, but is comprised of two vessels only. Visitors to Lüderitz are far less numerous than to the Walvis Bay area, and thus this industry operates on a considerably smaller scale. A marine wildlife-watching tour in Lüderitz

covers the area between Lüderitz harbour and Halifax Island, and provides tourists with the opportunity to observe African penguins and Cape fur seals. Heaviside's dolphins are also regularly observed on this tour, and occasionally humpback whales, southern right whales, minke whales and other cetaceans may be sighted. As of March 2013, two companies provided boat-based MWWT in Lüderitz, employing a total of four people in full-time jobs. Both companies run a single vessel; one has been operating since 2009 and the other since 1984. Basic data collection was carried out by telephone with both Lüderitz MWWT operators in March 2013. In 2012, an estimated 1400 passengers took part in MWW trips with these two companies, and the price of a ticket was N\$ 350 per adult, resulting in an estimated N\$ 490,000 (~€ 41,900) in ticket sales.

## **2. Economic importance and sustainability of MWWT in Walvis Bay**

The MWWT industry in Walvis Bay began around 1992 when short tours to visit the seal colony at Pelican Point became available. Visitors regularly took part in fishing trips in the bay, and based on regular sightings of cetaceans during those trips, one company began to provide marine wildlife-watching tours (M. Dreyer pers. comm.). The industry has since grown exponentially and attracts tourists to the coast year-round. This study aimed to document the extent of the industry, its importance in providing employment and income to the Walvis Bay area and in highlighting Namibia's unique and diverse marine fauna to tourists. The study also aimed to provide insight into the continued expansion of this industry, the industry's concerns regarding sustainability, and to provide a baseline for examining anthropogenic impacts on marine wildlife in Walvis Bay.

### **2.1 Data collection**

In 2008 and 2010, during the austral winter (July-August), data were collected from MWWT companies operating in Walvis Bay. In both 2008 and 2010, companies were contacted by email and telephone to explain the purpose of the study and to schedule an interview. Interviews with the manager, director or owner of each marine tour company were carried out by the author. In one case, a member of staff was designated as a representative. Interviews were guided by a standard semi-structured questionnaire and took place in an informal setting, close to many of the companies' offices, or at the home or office of the interviewee. Data were collected on number of full-time and part-time employees, number of boats, ticket prices and number of passengers per year or for the previous 12 months, as well as seasonal peaks and troughs in passenger numbers. Following these questions, operators were asked an open question regarding their concerns relating to the industry or any issues they felt it might face in the future. This provided an opportunity to examine the perceptions of the industry with regards to its own growth and the marine environment of Walvis Bay.

For seasonal jobs, the sum of the numbers of months of full-time employment provided by each position were summed and then divided by 12 to provide an estimate of the number of full-time-equivalent jobs. Several respondents provided estimates of annual passenger numbers based on the previous year, whilst others provided average numbers of passengers per day or month for the 'peak season' and 'low season'. Unless number of months for busy season and low season were specified, figures were calculated as follows:

$$\text{Number of passengers per year} = (N_p * 5 \text{ months}) + (N_L * 7 \text{ months})$$

Where  $N_p$  = number of passengers per peak month and  $N_L$  = number of passengers per low month.

In the case of one operator, monthly low season passenger numbers were not provided and were conservatively calculated as:

$$N_L = 0.5 * N_p$$

In 2010, many operators provided data on number of boat trips per day or per week. In order to transform this into number of boat trips per year for each company, the number of days or weeks in each stated period of months was multiplied by the number of trips per day or week, as appropriate. Where low and peak season were not identified, a peak season of August to December (152 days, excluding Christmas Day), and a low season of January to July (212 days) were used.

## 2.2 Results

### 2.2.1 2008

Two companies ran kayaking tours in Walvis Bay in 2008, but data were not collected from these companies. Eight companies were operating marine tours (using motorised vessels) in Walvis Bay in 2008, of which five agreed to be interviewed (Table 1). These five companies operated 21 of the 25 boats that were used for marine wildlife-watching trips in the bay. Two companies operated two sailing catamarans each, although these boats were regularly operated under motor. The remainder of the companies operated ski-boat catamarans of varying sizes (7 – 12 m). Although all the companies offered a range of activities including charters and fishing trips, the most common activity by far was the standard wildlife-watching trip. This usually lasted between three and four hours and had the same general structure, regardless of the company, focusing on specific features in Walvis Bay – an oyster farm, the Bird Island guano platform in the northeast of the bay and in particular, Pelican Point, which provides opportunities to observe fur seals and Heaviside's dolphins. Bottlenose dolphins and other cetaceans sighted within the bay are a focal point whenever encountered.

Table 1: Data collected from Walvis Bay MWWT operators in 2008 and 2010. Excludes data from kayaking operators collected in 2010.

	2008	2010
Full-time or equivalent jobs (min)	<i>51*</i> (54)	80
Number of companies	8	8
Number of boats	25	27
Ticket price	N\$ 390-430	N\$ 450
Number of passengers for 1 year	<i>51,980*</i>	66,507
Number of trips per year	n/a	4,412
Estimated total revenue for 1 year	<i>N\$ 21,895,400*</i> (N\$ 27m)	N\$ 29,928,150

\*2008 data in italics comprise figures for 5 of 8 companies only. Figures in parentheses indicate minimum estimates for the entire industry.

Operators were asked about the origin of their passengers. The majority of MWW participants were from Europe, especially Germany. However, participants from South Africa and from other parts of Namibia are numerous over the summer holidays (December). Operators also mentioned tourists from other neighbouring African nations (e.g. Botswana) and from the US. The price of an adult ticket ranged from N\$ 390 to N\$ 430 per person (with reduced prices for children under 12). Operators were asked to estimate a number of paying passengers per year, or provide the total passenger number for the previous year, if known. Amongst these five companies, an estimated 51,980 passengers per year took part in MWWT trips<sup>1</sup>. Assuming that all these passengers were adults, this would have resulted in N\$ 21,895,400 (~€ 1,874,600) in ticket sales for a single year (multiplying each company's annual passenger number by the price of that company's ticket). Three companies, operating a total of three vessels, were not included in these calculations so the total income from tickets alone is estimated to be considerably more than this figure.

The five interviewed companies employed a total of 41 people on a full-time basis. Additionally, 21 people were employed on a part-time or seasonal basis, providing an additional 10 full-time equivalent jobs, thus at least 51 full-time or full-time equivalent jobs were provided. Scaling up to account for the three companies for which no data are available, this sector of the tourism industry was thus likely employing at least 65 individuals (since the three remaining companies were known to employ at least 3 people full-time), and providing the equivalent of at least 54 full-time jobs to the local area, in 2008. When asked about future plans for their business, several operators had plans to purchase another vessel

to add to their fleet. No detailed information was collected on operators' concerns, but three operators mentioned a need for regulation of the industry's size, and one operator suggested that encouraging seals to continue boarding the boats would at some point cause problems for tourist safety.

### 2.2.2 2010

In 2010, eight companies were running motor boat or motor/sailing cruises (Table 1), with an additional 3 companies running kayak trips. The number of motorised vessels operating in the bay had increased from 25 (21 ski boats and 4 sailing catamarans) to 27 (14 small ski boats; 7 large ski boats/motorised catamarans and 6 large sailing catamarans of 13-20 m). Several of the smaller ski boats being used in 2008 had been decommissioned, and there was a clear move towards larger, motorised catamarans with a greater passenger capacity.

An estimated minimum of 80 full-time (or equivalent) jobs were provided by the industry. Over 66,000 passengers took part in a MWW trip in Walvis Bay in 2010. One of the eight companies had only operated for two months at the time of the interview and thus did not contribute to the figures for passenger numbers or ticket sales. The average ticket price was N\$ 450, thus estimated ticket sales for the preceding 12 months amounted to N\$ 29,928,150 (~€ 2.5 million). In addition, three kayaking companies operated tours at Pelican Point. The combined capacity of these three companies is 22 kayaks (6 single and 16 double, thus capacity for up to 38 tourists), and at least 2 full-time equivalent jobs were provided by kayaking companies. A ticket cost between N\$ 500 and N\$ 550 and an estimated 1,776 tourists had taken part in kayaking tours in the previous 12 months, generating at least N\$ 888,000 in ticket sales. Total ticket sales for both kayaking tours and motorised boat cruises in Walvis Bay thus amounted to N\$ 30,816,150 (~€ 2.6 million). There were an estimated 4,412 boat trips per year carried out by this industry as a whole (excluding kayaking tours). This equates to an average of 12 boat trips per day for 364 days in the year. In fact, daily, boats are fewer during the low season and more numerous during peak months, in particular July, August, December and January. This suggests that on any one day, any large marine vertebrate (but particularly cetaceans) sighted in the bay may be approached by 12 or more vessels during peak tourist season. Since all boat tours run between 08:00 and 13:00, due to high winds in the afternoon, this attention on marine wildlife is focused into a short, but intense time period.

When asked about their business plans for the next 12 months, four companies suggested that they were considering adding another boat to their fleet or replacing an older boat with a new, larger vessel. The growth of the industry or number of boats currently operating in Walvis Bay was mentioned as a concern for the area and the industry by five operators (including several who themselves were considering purchasing a new boat). Also mentioned

were aspects such as the excessive speeds used by some skippers and the amount of time spent by some boats with dolphins or whales. One operator noted that his passengers, particularly Europeans, were now more aware than in the past of guidelines and regulations in other parts of the world for the operation of boats around cetaceans.

## 3. Other observations on the marine tourism industry in Walvis Bay

### 3.1 Feeding wildlife

Cape fur seals were present in Walvis Bay harbour before the MWWT industry's existence in this area, likely attracted to the scraps discarded from fishing vessels going into the port. Feeding of these seals, as part of the marine wildlife-watching trips, developed after the early tour operators observed several seals with entanglements, probably pieces of fishing nets, around their bodies, and started trying to attract them to the tour boats with fish, in order to cut the netting away (M. Dreyer pers. comm.). Over time, the seals have come to associate tour boats with food, and a number of seals now board these vessels to be fed daily by the crew (although according to several operators, any specific individual seal only exhibits this behaviour for several years at most, thus new individuals must periodically be 'recruited'). Since many of the vessels are small ski boats, having a seal on board means that these large animals (the sub-adult males which board the boats likely weigh at least 200 kg) are in very close proximity to all boat passengers. Guides provide some basic information on the ecology of the Cape fur seal to passengers and thus, many operators state that it is an educational experience. On some of the tours, the passengers (including small children) are encouraged to feed the seals, with several tour guides having assured the author, in the past, that only 'well-known' seals with non-aggressive behaviours are allowed on board for such interactions. Tourists are often encouraged to rub the seals' pelts or place their arms around the animals for photographs. In addition to this activity, seabirds (particularly pelicans and kelp gulls) are also fed daily during these tours. Many of the staff interviewed believed that this provides an exclusive opportunity for photographers, and that this activity, along with the close encounter with seals, is a unique selling point for their tours. Images of seals on board the boats and in close contact with visitors are used by many operators on their websites and advertising materials such as brochures (R. Leeney pers. obs., Mar 2013).

### 3.2 Development of a Code of Conduct with input from the MWWT industry

A Code of Conduct (CoC) was first developed for this industry in 2005, by the local NGO, Coastal Environment Trust Namibia (CETN) in response to concerns about the number of tour boats approaching cetaceans in the bay. This CoC was presented to the Marine Tourism Association Network (MTAN), which oversees the activities of the MWWT industry in

Walvis Bay, and was adopted in principle but never in practice. In 2011 an updated CoC, based on existing guidelines for best practice for whale- and dolphin-watching (e.g. Carlson, 2011, 2012; Garrod & Fennell, 2004), was developed by the Namibian Dolphin Project in collaboration with the Namibian Ministry of Fisheries and Marine Resources (MFMR), with a view to being adopted as legislation by MFMR<sup>2</sup> at some point in the future (J.-P. Roux pers. comm.). At a meeting with MTAN members in early 2012, this proposed CoC was presented to members, an explanation of the reasoning behind the stated limits on vessel numbers and minimum approach distance of vessels to cetaceans was provided and feedback was then collected, which was passed on to MFMR. As representatives of only five companies attended the meeting, subsequent individual meetings were arranged with the owner or manager of each marine tour company, to provide additional opportunity for feedback. The CoC focused on two main themes: operation of vessels in the presence of cetaceans and interactions between tour boats and seals. An overview of the key elements of the 2012 CoC is provided in Appendix I.

Objections of the industry mainly focused on the proposal to ban the feeding of all wildlife. The industry felt that the feeding of seals and the presence of seals on the vessels was central to the uniqueness of their trips and was important in attracting passengers. However, during interviews in 2010, many operators admitted that a significant proportion of their customers took part in a marine wildlife-watching trip because it was part of the itinerary of their tour



*Bottlenose dolphins are seen regularly from the coast of Walvis Bay*

*Photo: Ruth Leeney*

of Namibia, not because they had specifically come to the coast for the purpose of marine wildlife-watching. Operators also felt that the proposed limit of three vessels around an individual or group of cetaceans was too few, and expressed concerns regarding the 50 m approach limit, given that bottlenose dolphins and Heaviside's dolphins sometimes approach tour boats closely in order to bowride. The issue of how the CoC would be policed was raised. It was widely acknowledged that self-regulation has not worked in the area and that this was unlikely to change unless the regulations were somehow enforced. Observations (by the author) of vessel behaviour after the consultation phase confirmed that after several weeks, the proposed CoC was not being used and in particular, the number of vessels within 50 m of groups of dolphins was often greater than recommended. Finally, a no-entry zone was proposed to MTAN by the Namibian Dolphin Project in 2011, along part of the Walvis Bay coastline where bottlenose dolphins are frequently observed resting. This area has yet to be formalised as a protected area and despite initial support from MTAN members, a number of the marine wildlife-watching vessels operating from Walvis Bay were observed in this area in 2013 (R. Leeney pers. obs.).

## Discussion

Tourism has been the fastest-growing sector of Namibia's national economy in the past two decades (Robertson et al. 2012), and coastal tourism has benefitted from this growth. Research into nature-based tourism in both terrestrial and aquatic environments over several decades suggests that wildlife-focused tourism and recreation sectors can harm the natural resources upon which they are based (e.g. Anderson et al. 2011; Archer & Cooper 1998; Erize 1987; Higham & Lusseau 2004; Mbaiwa 2003; Orams 1999; Parsons 2012). Emphasis on sustainable and responsible tourism industries has increased in recent years, and Franch et al. (2008) noted that a new market segment comprises tourists with greater awareness of environmental issues and the need for environmental protection in the areas they visit.

This study aimed to assess the contribution of Namibia's MWWT industry to tourism in Namibia as a whole, but also to identify areas where this industry requires support and guidance. Walvis Bay's MWWT industry is considerably more developed than those at Cape Cross and in Lüderitz, and generates the bulk of the revenue attributable to MWWT. In 2010, this industry was generating at least N\$ 30 m direct revenue in ticket sales and employing over 80 people in Walvis Bay. The baseline economic value of coastal tourism activities (calculated as the direct contribution to national income) in 2006 was estimated at N\$ 956 m and includes numerous activities other than MWWT, such as quad biking and recreational angling tourism (Alberts & Barnes 2008). The figure for direct income from MWWT in Walvis Bay alone represents 3% of this economic value and does not take into account the considerable additional income generated by tourist spending in restaurants, hotels, shops and other small businesses on the coast. Walvis Bay's MWWT industry provides



employment for both skilled and unskilled workers. This industry has undoubtedly brought considerable benefits to the community of Walvis Bay and has likely boosted the level of tourism at the coast.

However, several concerns have been raised in recent years, both by operators and by other marine stakeholders, in relation to the sustainability of this industry. It has grown exponentially since its small beginnings twenty years ago. This growth has been unregulated, with no limit on the number of boats or the number of companies that may operate in the area. Whilst demand for MWW trips may have supported this growth, there has been little consideration for the effects that a larger industry may have on the wildlife on which it depends. The concerns of the operators are focused on the size of the industry. The main issue mentioned by operators was the growth of the industry and the increase in number of vessels; likely because this causes logistical issues for boarding and landing of passengers, and also results in many boats all attempting to view the same individual or group of animals. Alberts & Barnes (2008) noted that any growth in tourism on Namibia's coast brings with it concerns for sustainability because of the open access for development, which 'encourages overuse, pollution and damage'. Only two operators directly expressed concern regarding the daily pressure on cetaceans from numerous tour boats, but the concerns of tourists regarding the number of vessels around and close approaches to groups of cetaceans, have been noted by several operators (R. Leeney pers. obs.). An increase in the number of tourists to the coast in recent years may have increased competition among a growing number of operators, thereby compromising the quality of the interactive wildlife-watching experience (Catlin & Jones 2010).

A number of studies have documented the impacts of vessels and vessel-based tourism on cetaceans, and these have recently been summarised by Parsons (2012). New et al. (2013) illustrate how disturbance to travelling, socialising, foraging and resting behaviours can affect health and fecundity in individuals, resulting in population-level effects over time (e.g. Bejder et al. 2006a; Bejder et al. 2006b). Disturbance may also simply cause individuals or a population to abandon or avoid the area (e.g. Lusseau 2005). In either case, this would have negative implications for a MWWT industry which focused on such a population. However, definitive research on the impacts of tourism is often lacking or inadequate to inform policy decisions and management activities (Lück & Higham 2007). Bejder and Samuels (2003) noted that studies of cetacean-focused tourism tend to be limited by an incomplete understanding of undisturbed behaviour and thus a paucity of baseline data against which comparisons can be made. This is certainly the case for Walvis Bay, as tour boats usually operate every day except Christmas Day (excluding days with unfavourable sea conditions) making collection of data without tour boats almost impossible.

Although MWW in Walvis Bay focuses on both seals and cetaceans, Cape fur seals are adaptive animals, present in large and apparently increasing numbers along Namibia's coast (Butterworth et al. 1995; Crawford et al. 1989). The primary concern for the Walvis Bay MWWT

industry is thus the interaction of tour boats with cetaceans, particularly the bottlenose dolphins which are partially resident in the bay. Although this population's range is known to extend along much of the Namibian coast, at least as far south as Lüderitz and as far north as Cape Cross (Findlay et al. 1992; S. Elwen pers. comm.), the bay is thought to form a core habitat for this population, which is estimated to comprise less than 100 individuals in 2008 (Elwen et al. in prep.). Indurkha (2012) investigated the impact of tour boats on bottlenose dolphin behaviour in Walvis Bay, documenting a reduction in resting behaviour and an increase in socialising behaviour in the presence of tour boats, with decreases in the proportion of resting behaviour as the number of boats increased. Disturbance to behaviour was also greater with longer exposure to tour boats. Also in Walvis Bay, Heaviside's dolphins with more marked dorsal fins (assumed to be older individuals) appear to avoid vessels more than unmarked individuals, suggesting that these dolphins, also a focus for MWW vessels, tend towards avoiding vessels as their cumulative exposure increases (Elwen et al. in prep.). However, models of changes in bottlenose dolphin behaviour in response to increasing levels of boat traffic suggest that dolphins are capable of compensating for the changes in behavioural budget and thus their health is unaffected (New et al. 2013). The authors proposed that changes in behavioural budget may not automatically imply a significant biological impact on a population. Nonetheless, this likely depends on the nature of the disturbance and the availability of alternative habitat to meet a population's behavioural needs, and further research is required in order to determine what, if any, impact MWWT in Walvis Bay has on cetaceans and in particular, on the small local population of bottlenose dolphins.

Numerous studies have documented changes in behaviour of wildlife in response to provisioning (e.g. Foroughirad & Mann 2013; Newsome & Rodger 2008; Orams et al. 1996). Studies in Shark Bay, Australia, showed that calves of female dolphins that were regularly provisioned with fish received less care and had higher rates of mortality, compared to calves from non-provisioned females (Mann et al. 2000; Mann & Kemps 2003). Orams (2002) discussed the complicated issue that is the feeding of wildlife as a tourism attraction.



*A Heaviside's dolphin bowrides in front of a marine wildlife-watching boat in Walvis Bay*

*Photo: Ruth Leeney*

He noted that the deliberate and long-term provision of food to wild animals has been shown to change natural patterns of behaviour. It can result in dependency of animals on humans for food, and may also result in aggressive behaviour to obtain food, which may harm conspecifics or in some cases, tourists. Several tour guides within the Walvis Bay MWWT industry have been bitten by seals during their tours, and there is at least one reported case of a tourist being injured by a seal whilst on a tour boat. Two surfers were also bitten and seriously injured by a female seal at Cape Cross in 2008 (Hartman, 2008), although it is not known whether this incident was linked to the provisioning of seals on MWW tours. It is perhaps surprising, given the number of very close encounters between tourists and these animals, that so few negative interactions have occurred. As pointed out by Orams (2002), both management agencies and tourists have an obligation to carefully consider the potential impacts of tourism on wildlife and vice-versa. One serious injury to a tourist will likely suffice to cause considerable detriment to the Walvis Bay MWW industry.

Marine tourism offers considerable potential for peripheral areas (Garrod & Wilson 2004). The remoteness and undeveloped nature of Namibia's coastline, and the diversity of marine life found there, provides an ideal setting for ecotourism. As highlighted by Garrod and Wilson (2004), ecotourism is likely a more sustainable development option than the other limited prospects available in peripheral areas. Certainly, in Namibia, tourism is one of the few opportunities for people in coastal areas, has the potential to improve quality of life, provide training and socio-economic opportunities (Lapeyre 2010) and is potentially much less harmful to the natural environment than alternatives such as mining (e.g. Abdelouas 2006; Simmons 2005). In harnessing the natural environment, ecotourism should, according to Garrod and Wilson (2004), provide the local community with strong economic incentives to conserve it for the future. Yet there has been little demonstrated concern amongst the stakeholders (tour operators) in Walvis Bay regarding the sustainability of their actions, which suggests either that they do not believe their actions to be detrimental to the natural resource (marine wildlife), or that the sense of stewardship predicted by Garrod and Wilson (2004) has not resulted from their reliance on these resources. Likewise, CoC have worked well in many areas where MWWT takes place (Carlson 2011, 2012; Garrod & Fennell 2004), but are clearly not suited to the Walvis Bay industry, where the value of such guidance is not currently recognised. Namibia is not alone in this respect; Kessler and Harcourt (2013) described the regular breaching of whale-watching regulations off Sydney, Australia, and suggested that current regimes for minimising harm to the animals targeted by MWWT may not be achieving their objectives. The authors suggest that enforcement, an operator licensing system linked to compliance and raising awareness amongst whale-watch tourists are mechanisms by which compliance with regulations can be increased.

The way forward for the MWWT industry in Walvis Bay will likely be through a combination of education, regulation and research. Education of tourists is considered an essential element of ecotourism, and also has the potential to be an effective means of reducing the

negative impacts of tourism on the environment (Forestell 2008; Orams 1995; Orams & Hill 1998). Tourism industries do evolve over time and are a product of the social expectations and values of tourists (Peake 2012), and it is likely that many tourists do now expect education or interpretation as part of a wildlife-viewing experience (Andersen & Miller 2006; Lück 2003). Education of tourists has become an integral part of some MWWT industries, and in doing so, raises the tourists' own expectations in terms of tour operator conduct, whilst simultaneously increasing the benefits they will receive through participating in a tour (e.g. Forestell 1993; McInnis 2012). Regulation will be essential to manage the number of vessels operating in a given area and the way in which these vessels interact with marine wildlife. The zoning for different uses of important areas for marine wildlife, such as the proposed no-approach zone in Walvis Bay, must be done in collaboration with the tourism industry, to ensure that conflicts do not occur (Salm 1985), but also requires the backing of government authorities. An 'eco-labelling' programme such as that described by Chen (2011) might also offer potential, generating educational benefits for visitors, whilst reinforcing the need for environmental behaviours amongst both tour operators and the tourists themselves. Through advertising and public awareness, such a programme can also create a market advantage for eco-labelled tours, thereby further encouraging responsible behaviour amongst tour operators. Lastly, research is essential to facilitating an ongoing assessment of the health of the marine wildlife on which tourism focuses. Significant impacts on wildlife, whether due to tourism or other causes, can go undetected in the absence of time series data (Higham 1998). Research can provide the scientific basis for sound conservation, whilst ecotourism can provide benefits to local communities and simultaneously generate local and international support for protected areas (Brightsmith et al. 2008).

## Conclusions

The MWWT industry in Walvis Bay makes an important contribution to the local economy through employment, direct and indirect revenue and by bringing tourists to Namibia's coast. However, the size of the industry and lack of regulation thereof raises concerns about the sustainability of MWWT activities in Walvis Bay. The MWWT industry has the potential to continue to boost the economy of Namibia's coastal region, but only if conducted in a sustainable manner. Regulations are required to limit the number of boats, number of companies and to guide the way in which tours are carried out. In parallel with regulations, education of tourists will likely be necessary, to ensure that their expectations are in line with best policy for protection of the resources upon which MWW relies. Finally, ongoing research is essential, in particular to monitor the dynamics of the small bottlenose dolphin population which is subject to considerable attention from MWWT in Walvis Bay. Such a change to the structure and behaviours of Namibia's MWW industry will be key to both the conservation of Namibia's marine life and the longevity of Namibia's coastal tourism industry.

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## Notes

- Two companies provided average passenger numbers per month; two provided total passenger numbers for the previous year. One company provided the number of trips run in the previous year, a minimum and maximum number of passengers, from which a mean number of passengers was calculated. This value was multiplied by the number of trips per year to generate an estimated number of passengers for one year.
- At the time of writing, no legislation has been passed by MFMR.

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## Appendix I

### Summary of the 2012 proposed Code of Conduct for motorised vessels conducting Marine Wildlife-Watching Tourism in Walvis Bay

Developed in consultation with J.-P. Roux (MFMR) and the Namibian Dolphin Project. A complete proposed CoC is available from the author on request. These guidelines have not been finalised and are provided for reference only; no legislation currently exists for the marine wildlife-watching industry in Namibia.

#### A. General guidelines

No marine tourism activity around marine mammals, turtles and seabirds (including approach to colonies) is permitted between the period from 30 minutes before sunset to 30 minutes after sunrise.

Attempts to capture, feed, touch or swim with any marine mammal (including fur seals) or turtles are strictly prohibited.

Practices which encourage 'unnatural' behaviours in wild animals (e.g. feeding of animals or encouraging the boarding of vessels by fur seals, etc.) are not permitted. Operators are required to take whatever measures are necessary to prevent habituated animals from engaging in these behaviours until such time as they lose these habits.

### **B. In the presence of cetaceans**

If you sight cetaceans at a distance, make forward progress maintaining a steady speed, slowing down to 6 knots or less when you are within 1 km of them. Once within this caution zone, **never approach closer than 50 metres** of the animals and do not remain in close contact (<100m) with the animals for longer than **10 minutes**.

Any individual or group of whales/dolphins should not be submitted to close-quarter observation (50-60 m) for more than **1 hour** consecutively and with a maximum of **2 hours** in any 24-hour period (e.g. two one-hour periods in one day with a **minimum of three hours of no-disturbance period in between**).

Maximum speed of **3 kn** within the close-quarter observation zone (50-60 m).

Do not chase cetaceans, drive a boat directly towards them, or encircle them. Wherever possible, let them approach you. If they choose to approach your vessel or bowride, **maintain a steady speed and course**.

Do not change course or speed in a sudden or erratic manner.

Allow groups of cetaceans to remain together. Avoid deliberately driving through or between groups of cetaceans.

**Avoid close approach to cetaceans with young.** If the presence of a calf is observed, any vessel must retreat to a minimum distance of 300 m at low speed (below 6 kn).

Ensure that no more than **3 vessels are within 150 m** of cetaceans at any one time and no more than one boat within close proximity (50-60 m). Do not call other vessels to join you.

No more than **5 vessels should be within 500m** of the same individual or group of animals.

**Move away slowly if you notice signs of disturbance**, such as prolonged diving, erratic changes in speed and direction, rapid swimming at the surface, formation of tight groups, repeated tail or flipper-slapping.

Only vessels with special permits from MFMR and engaged in scientific research or rescue operations (e.g. in the case of entangled whales) are allowed to approach whales within the **50 m exclusion zone**. These vessels should be flying a research flag.

### **About the author**

**Ruth H. Leeney** holds a PhD in harbour porpoise ecology and acoustic monitoring from University College Dublin, Ireland. Her research focuses on generating baseline data on cetacean and elasmobranch populations in West Africa, development of sustainable whale-watching industries and ethno-ecological studies on the links between local communities, culture and marine environments. She is a co-founder of the Namibian Dolphin Project and a co-ordinator of the Namibian Strandings Network.



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