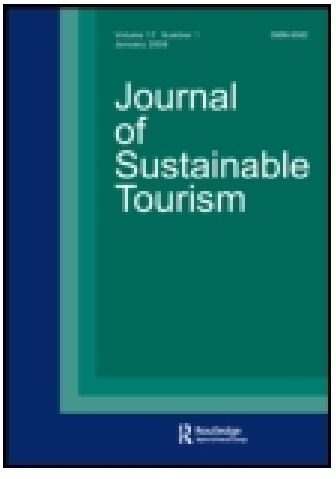

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The human dimensions of wildlife tourism in a developing country: watching spinner dolphins at Lovina, Bali, Indonesia

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The human dimensions of wildlife tourism in a developing country: watching spinner dolphins at Lovina, Bali, Indonesia

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The number of cetacean watching tourism operations in developing countries has doubled in the past decade. Practices are typically unregulated and not informed by research, especially research into the human dimensions of the tourist experience. Dolphin watching tourism at Lovina, Bali, started in the late 1980s when local fishers formed self-regulating cooperatives. Up to 180 dedicated operators use small fishing vessels to carry passengers to watch dolphins close to shore. Most tourists come from western countries, although the industry also attracts Asian visitors. Most visitors are tertiary-educated. Tourist satisfaction ranges from low to medium. While there was no significant difference between the average satisfaction of western and Asian tourists, the associated variables were different. The satisfaction of western tourists was associated with encounter management, preferred number of boats and the number of dolphins seen. Encounter management was the only variable associated with the satisfaction of Asian tourists. Satisfaction was positively associated with willingness to recommend the tour: western respondents who felt neutral to very comfortable with their dolphin encounters were more likely to promote the tour. Better understanding of the tourist experience is crucial in designing sustainable marine wildlife tourism in developing countries; such research appears to be rare.

Keywords: nature-based tourism; tourist behaviour; sustainable tourism; wildlife tourism

Introduction

Wildlife tourism, defined as "tourism based on encounters with non-domesticated (non-human) animals in either the animal's natural environment or in captivity" (Higginbottom, 2004, p. 2), provides: (1) a non-consumptive way for visitors to enjoy wildlife, (2) direct and indirect economic benefits, and (3) justification for conserving the target species and their ecosystems (Barbier, 1992; Barnes, Burgess, & Pearce, 1992; Van Egmond, 2007). In the last few years, wildlife tourism has grown substantially in many developing countries[1], attracting an international market (typically from western countries) that significantly contributes to the local economy (Akama, 1996; Barnes, et al., 1992; Okello & Yerian, 2009).

In marine settings, wildlife tourism typically targets charismatic megafauna including sea turtles, whales and dolphins, dugongs, manatees, stingrays and sharks (Dobson, 2006; Gerrard, 1999; Orams, 2001; Sorice, Shafer, & Ditton, 2006; Tisdell & Wilson, 2004), providing significant economic benefits at local and national levels (O'Connor, Campbell, Cortez, & Knowles, 2009; Stoeckl et al., 2010; Tisdell & Wilson, 2004). An example of lucrative wildlife tourism is cetacean (whale and dolphin) watching, often suggested as

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an alternative livelihood to destructive activities such as whaling (Neves, 2010). Cetacean watching assists local economic development, especially in developing countries. Whale watching contributed more than US$1.2 million per annum in direct expenditure to the Indonesian economy in 1998 (Hoyt, 2001). Although the estimated value of this industry dropped to slightly over US$517,000 in 2008, some of this decline may be attributable to technical changes in data collection protocols (O'Connor, et al., 2009).

Cetacean watching is not without risks to both passengers and target wildlife populations. Evidence is growing that some dolphin populations are adversely affected (Bejder, Dawson, & Harraway, 1999; Constantine, Brunton, & Dennis, 2004; Lusseau, 2006). Declining population size is one measure of potential impact on target species, but can be very difficult to detect (Taylor, Martinez, Gerrodette, Barlow, & Hrovat, 2007). Furthermore, it has rarely been possible to attribute the cause of the population decline to tourist interactions, because of multiple causal factors and the lack of controls (Milinski, 1997). Limited funding often forces researchers to conduct short-term instead of the long-term ecological research required to detect change, particularly in developing countries where researchers rarely have access to the funding required for robust ecological research (Aragones, Jefferson, & Marsh, 1997).

Although ecological sustainability is necessary, it is not sufficient to ensure the long-term viability of a cetacean watching operation. Quadruple Bottomline Sustainability (Horrigan, 2002; Durden & Pech, 2006) and the Prism of Sustainability (Spangenberg, 2004; Valentin & Spangenberg, 2000) are two sustainability frameworks that emphasise the importance of not only the ecological component but also the social, economic and managerial elements of sustainability. In line with these cross-disciplinary frameworks, research on the social and economic dimensions of cetacean tourism may potentially generate relatively low cost information quickly, as opposed to financially demanding ecological surveys (Aragones, et al., 1997). Such information may help managers to decide the best strategies for managing their industries in accordance with the Precautionary Principle, particularly in developing countries (Aragones, et al., 1997; Johannes, 1998; Kazmierow, Hickling, & Booth, 2000; Valentine & Birtles, 2004). Nonetheless, relatively few studies have documented the values and the drivers of tourist experience and satisfaction, or whether this information influences management decisions.

We reviewed 71 papers, theses and reports that discussed marine wildlife tourism including dive tourism. Only six described the experience of marine wildlife tourists in developing countries (Campbell & Smith, 2006; Curtin, 2006; Curtin & Wilkes, 2007; Kessler & Harcourt, 2010; Musa, 2002; Ponnampalam, 2011). Curtin & Wilkes (2006, 2007) discussed the experiences of tourists who swam with dolphins in developed and developing countries; however, they did not differentiate between tourist experiences based on country of origin. Kessler & Harcourt (2010) and Ponnampalam (2010) are the only publication we found that specifically documents the experience and satisfaction of cetacean watching tourists in developing countries (Tonga and Oman). Only three papers discussed the economic impact of cetacean watching tourism in developing countries (Hoyt, 2001; Orams, 2002; O'Connor, et al., 2009). Although Kumar (2010) provided an economic valuation of Chilika Lagoon in Orissa, India, home to Irrawaddy dolphins, he did not explicitly mention the economic importance of the dolphin watching industry to the local villages. Clearly, more efforts must be made to examine the sustainability of the cetacean watching industry in developing countries from multiple perspectives including human dimensions.

The level of tourist satisfaction is often considered to be an index of the service level of a tourist attraction and of the likelihood of tourists returning or recommending a site to others

(Akama & Kieti, 2003; Kozak & Rimmington, 2000; Turner, Reisinger, & McQuilken, 2001) and, by extension, an indicator of social, economic and managerial sustainability. Other such indicators include visitor expectations, the most liked and disliked aspects of the experience and the general opinions and comments of tourists (Birtles, Valentine, Curnock, Arnold, & Dunstan, 2002; Higham & Carr, 2003; Kazmierow, et al., 2000).

Satisfaction is a post-purchase attitude that can serve as an evaluation of the purchased product (Pearce, 2006). Visitor satisfaction is not a one-dimensional indicator. It is influenced by many variables (Orams, 2000; Ryan, 1998), including gender (Musa, 2002; Ryan & Harvey, 2000), education level (Hughes, 2001; Reynolds & Braithwaite, 2001), environmental conditions (e.g. weather and sea state in the case of whale watching [Birtles, et al., 2002]); emotional connection and comfort (Okello & Yerian, 2009) and over-crowding (Birtles, et al., 2002; Musa, 2002; Orams, 2000).

Although visitor nationality also influences satisfaction (Akama, 1996; Choi & Chu, 2000; Kozak, 2001; Pizam & Sussmann, 1995), the basis of the satisfaction levels of wildlife visitors of different nationalities or ethnic groups (e.g. western visitors vs. Asian visitors) is poorly understood. Cetacean watching often attracts international travellers as well as local tourists (Hoyt, 2001; O'Connor, et al., 2009; Sutaria, 2009). However, there are limited data on the ethnic mix of cetacean watching tourists or on the demography, experience and satisfaction of tourists participating in cetacean watching in developing countries.

Commencing in the late 1980s, Lovina in north Bali is the first location in Indonesia where cetacean watching tourism was established. Anecdotes from Lovina suggested that the local dolphin watching industry largely catered to western tourists (tourists coming from Europe, United States, Canada, Australia or New Zealand [Van Egmond, 2007, p. 6]), many of whom complained about the boatmen chasing the dolphins or being too close to the animals. Based on this anecdotal information, we aimed to: (1) describe the tourist experience and profile of the dolphin watching industry in Lovina and (2) provide information relevant to the industry's sustainability. To address these aims, we investigated: (1) the experience and profiles of tourists who joined dolphin tours; (2) whether the variables contributing to satisfaction levels of western tourists were different from those affecting Asian tourists; (3) whether these variables could be used to inform the management of dolphin watching in Lovina and (4) if systematic examination of wildlife tourists' experience and satisfaction is an efficient means of catalysing the management of such industries in developing countries according to the principles of sustainability.

Methods

Location

Bali is arguably the most famous island in the Indonesian Archipelago and one of the world's most renowned tourism destinations. Located east of Java, Bali supported a local population of more than 3.4 million people in 2008 (http://bali.bps.go.id) in an area about 143 km long and 87 km wide. Tourism was initiated by the Dutch in 1924 when weekly steamships took tourists from Batavia (Jakarta during the colonial period) to Singaraja in Buleleng (North Bali) (Picard, 1997, p. 190). After Indonesian independence, tourism in Bali was established in the southern region of the island in the 1970s (Gouyon, 2005) and experienced a sustained increase, peaking at 1.5 million visitors in 2001 (BBC, 2002). International tourist arrivals plummeted 20% from 2002 to 2003 after the first Bali terrorist

bombing in October 2002 (Putra & Hitchcock, 2006), but bounced back in 2004 with more than 1.2 million visitors (from January to October) (Baker & Coulter, 2007). Although the second Bali bombing in October 2005 also reduced international tourist visitation and local income (Baker & Coulter, 2007), tourism is still the prime GDP source for Bali, contributing c.29% of GDP in 2006–2008 (BPS, 2009a). More than 1.9 million foreign visitors came to Bali in 2008, mostly from Asia (51.5%), Europe (26.3%) and Australia (15.7%) (BPS, 2009b).

Buleleng is a regency in the north of Bali with a population of 618,000 people in 2005 (http://bali.bps.go.id). In addition to having several nature-based tourism attractions (e.g. diving and dolphin watching), North Bali has a quiet, laid-back atmosphere that is different from the tourist sites in southern Bali (Berkmoes, Skolnick, & Carroll, 2009; Gouyon, 2005). The regency government has focused on ecotourism and agritourism since 2007, with Lovina one of the key areas.

Lovina is the collective name of several villages west of the capital of Singaraja. In 2007, approximately 9,800 people resided in Kalibukbuk and Kaliasem villages, the two major coastal villages in Lovina that host dolphin watching tourism. Kalibukbuk has three departure ports for dolphin trips (Banyualit, Aneka and Kalibukbuk) while Kaliasem has one (Kaliasem). Unless otherwise stated, we refer to the Kalibukbuk port per se as "Kalibukbuk".

Dolphin watching tourism in Lovina began in the late 1980s when the interest of international visitors informally alerted local artisanal fishers to the tourism opportunities offered by the diverse cetacean community close to shore. Local small-scale fishers formed self-regulated dolphin-watching cooperatives operating from the four major departure ports mentioned earlier. Each cooperative is managed by a dolphin guide association. Dolphin tours are conducted using *jukungs* (8–10 m long and 60–90 cm wide with two 5 m outriggers – Figure 1) that take up to four passengers (IDR 60,000 or USD 6.6 per passenger per trip). There are at least 184 *jukungs* along the coasts of Kaliasem and Kalibukbuk villages, plus another 58 fishing *jukungs* at Temukus village at the western border of Kaliasem. All these vessels have the potential to take tourists to see the dolphins. Almost all *jukungs* (179) are dedicated tour boats that are kept clean and have colourfully painted hulls and outriggers and increasingly powerful engines (currently c.12 HP). The remaining *jukungs* are regular fishing boats that fish daily and take tourists for dolphin watching during the high visitation season. Each *jukung* is typically owned and captained by one boatman who is licensed by his dolphin association. The industry is otherwise unregulated.

Figure 1. The traditional boats (*jukung*) that take tourists to watch the dolphins at Lovina. Each vessel is about 10 m long and takes up to four passengers and the boatman. Approximately, 20 boats were captured in this figure (Courtesy of Purwanto@TNC Indonesia 2008).

During 108 boat survey days between November 2007 and April 2010, we identified up to eight cetacean species in this inshore region: *Stenella longirostris* (spinner dolphins; dwarf or *S.l. roseiventris* and Hawaiian *S.l. longirostris* subspecies), *Grampus griseus* (Risso's dolphins), *Lagenodelphis hosei* (Fraser's dolphins), *Stenella attenuata* (pan-tropical spotted dolphins), *Tursiops truncatus* (common bottlenose dolphins), *Globicephala macrorhynchus* (short-finned pilot whales), *Balaenoptera edeni* (Bryde's whales) and *Pseudorca crassidens* (false killer whales). The target species is usually the Southeast Asian spinner dolphins.

Data collection

Direct observation from a *jukung* was used to capture the experience of a tourist on a typical dolphin trip in Lovina. These observations included the maximum number of boats per day, the number of boats around a group of dolphins and the average distance between the boats and the dolphins.

We used a combination of qualitative and quantitative social research methods to document the tourists' perceptions of and satisfaction with dolphin watching trips in Lovina. We designed our data collection around the pattern of tourist visitations. The Low Season usually lasts from November to May; the High Season from June to October (northern hemisphere summer holiday). In-depth interviews with tourists were conducted during a reconnaissance visit from October 2007 through January 2008 (Low Season). Based on the results of the reconnaissance visit, we constructed questionnaires in English and Indonesian that were distributed from June to September 2008 (High Season) and February–April and December 2009 (Low Season).

The High Season questionnaire comprised 28 questions covering demographic information about the respondents; their reasons for going dolphin watching; details of the trip including the weather conditions, boats and passengers; the features of the experience that respondents liked best and disliked most; satisfaction level (scales 1–10) and suggestions for improvement. We used a performance-only approach for measuring satisfaction: i.e. we did not include questions about respondents' expectations *prior to* joining the dolphin trip (Pearce, 2006).

Following preliminary analysis of the initial High Season data, the questionnaire was expanded for the Low Season surveys to 34 questions. Respondents were asked to rank their opinions about several additional features of their trip including their boat's distance from the dolphins ("How do you feel about how close your boat got to the dolphins?"; 5-level Likert scale), the way the boatman managed the encounter ("How do you feel about the way your boatman managed your encounter with the dolphins?"; 5-level Likert scale) and the time spent with the dolphins ("Was the amount of time you spent with the dolphins . . . "; 5-level Likert scale). Each questionnaire took the respondent 10 to 15 minutes to complete.

Our team usually administered the questionnaires in Kalibukbuk, the largest of the four dolphin watching ports. Depending on the number of tourists, we occasionally moved to other ports. We rarely split our team to cover two ports on the same day for safety reasons. Most team members were young females who more than once were verbally harassed by young male villagers.

The questionnaires were administered in the morning after the guests returned from their dolphin trip. In the High Season, our team sometimes encountered difficulties in soliciting respondents, usually because the tourists were: (1) tired and hungry after the boat trip and needed to return to their hotels for breakfast; (2) disturbed by the many souvenir sellers (we usually waited until the beach vendors finished offering their items to tourists);

(3) needed to check out from their hotels or (4) had other commitments. In the Low Season, we asked tourists to take the questionnaires back to the hotels for us to pick up later. This strategy helped increase the number of completed questionnaires.

In addition to distributing questionnaires, we also conducted a beach attendance survey to gain an overview of tourist attendance at the ports where our team was collecting data. In the High Season, we asked each tourist who had just completed a dolphin tour about their nationality and year of birth. This strategy was simplified for the Low Season survey to provide more time for questionnaire collection; we simply counted the number of tourists taking the dolphin trips.

Quantitative data analysis

We used descriptive statistics, nonparametric tests (Kruskal–Wallis and Mann–Whitney, $\alpha = 0.05$), cross tabulation and general log linear analyses (with Pearson Chi-Square tests and odds ratios) to analyse the data (software SPSS 16.0). Multiple regression trees (De'ath, 2002; Faraway, 2006) using the software package R 2.10.1, and stepwise regressions (SPSS 16.0) were also used, as summarised in Figure 2. In line with other authors, we assumed that our 10-scale response variable for satisfaction level is interval (Chen, Chen, & Lee, 2011; Clason & Dormody, 1994; Knapp, 1990; Pan & Ryan, 2007). In other words, we assumed equidistances between adjacent satisfaction levels.

A three-staged selection strategy (called "feature selection") was implemented to identify the most important variables associated with respondents' satisfaction (Figure 2). The first stage used nonparametric tests to identify the variables associated with satisfaction levels. The second stage used multiple regression trees because of their ability to detect and visually present complex interactions between the dependent variable (satisfaction level) and the independent predictor variables (the number of dolphins, preferred number of boats, reason for joining the trip, distance management, time management and encounter management [i.e. the way the boatmen managed the encounter with the cetaceans]). The regression trees gave a visual representation of the variables of interest (this figure can be found in the online version of this paper, at Figure S1, at www.tandfonline.com/rsus). We analysed the regression trees separately for each season (High/Low Season), because questions about encounter, distance and time management were not included in the High Season survey. To investigate possible effect of nationality type, we treated the seasonal data as follows: (1) combined nationalities; (2) western respondents and (3) Asian respondents. To simplify the design, we used all significant variables across all the three nationality combinations. The "rpart" command too was used to generate the regression trees, which were subsequently "pruned" to optimal tree size as described in Therneau, Atkinson, & Ripley (2010). The final result was a tree with a number of "splits" that describe the interactions between the important variables (in the splits) and the response. In the third stage of the process, the variables selected in the regression tree and the interactions between the variables were subsequently used as input variables to a stepwise regression with satisfaction level as the response. The final regression model was assessed on the basis of cross-validated R^2 (Faraway, 2006). The stepwise regression procedure allowed significance testing of the final model as well as the individual terms.

Qualitative data analysis

We analysed the qualitative data using coding and thematic analysis. Answers to open ended and qualitative questions were coded and grouped into several themes. Some coded

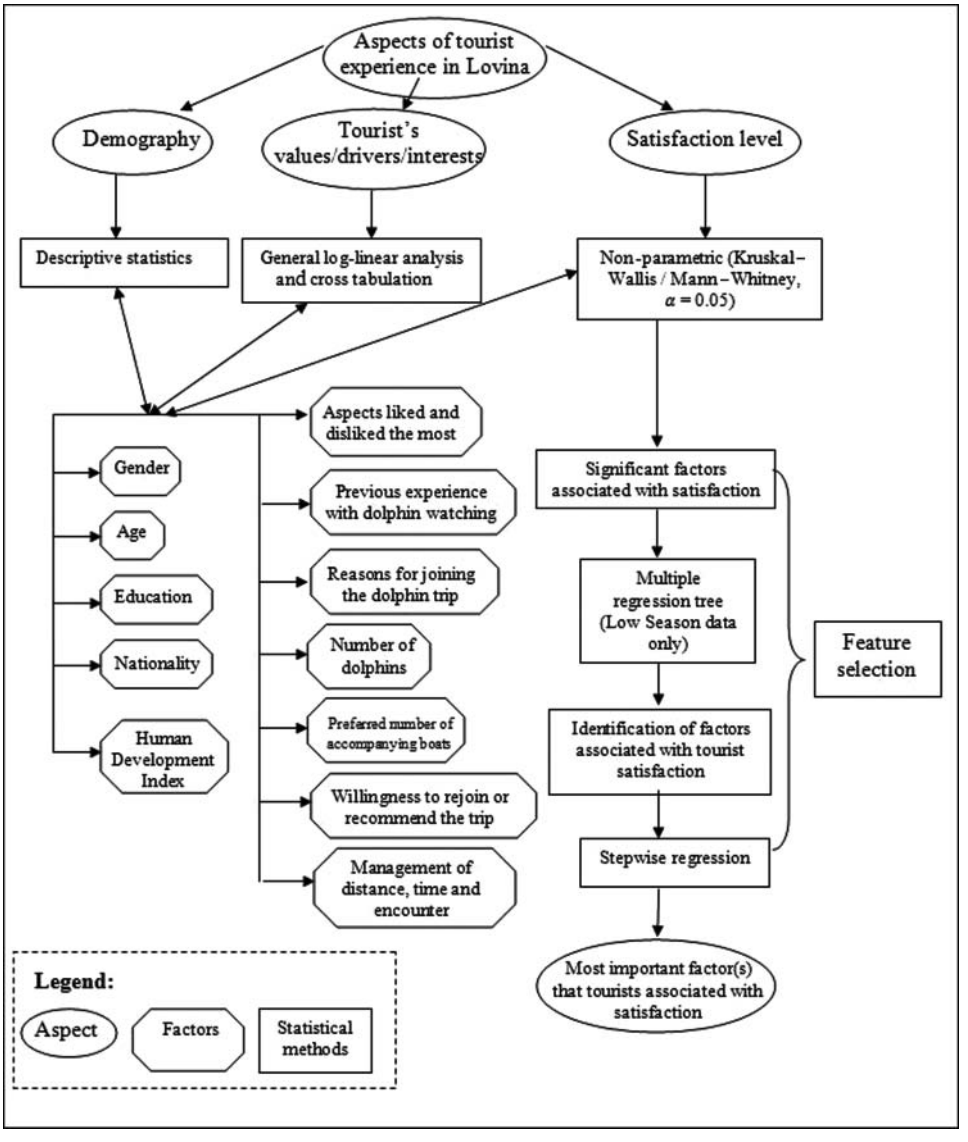

Figure 2. An outline of the statistical methods used to analyse the quantitative data from Lovina.

responses were later treated as quantitative data and analysed statistically. The best and worst aspects of the tours were coded and later analysed with general log linear analysis to investigate possible associations with other variables (e.g. nationality and previous experience with dolphin watching tourism).

Results

In accordance with our research aims, we have structured the result section to reflect the tourist profile of dolphin watching industry in Lovina and information relevant to the sustainability of the industry.

Lovina dolphin tourist experience and profile (Question 1)

A typical tourist experience of the dolphin encounter in Lovina

A dolphin trip in Lovina usually started at 6 am and lasted for two hours. Typically, a *jukung* with up to four passengers headed north to a location about 4 km offshore of Kalibukbuk and Kaliasem villages and congregated with other *jukungs* searching for dolphins. If after 30 minutes of searching at this location no dolphins had been seen, the vessels went further afield as the occupants searched for dolphins with their naked eyes. In addition to searching for flashing cameras and observing the behaviour of the other boats, the boatmen also used cell phones to communicate with other boatmen friends to help find the dolphins.

Once dolphins were sighted, the vessel approached them and positioned as close as possible to the animals until they disappeared or the guests had to return to the beach. Most boats returned around 8 am. A boatman typically conducted one dolphin trip per day. However, he may also have taken other guests on another dolphin trip or to a small adjacent reef for snorkelling. Dolphin trips were not usually conducted in the afternoon due to the strong sea breeze. Tourists sometimes experienced bad weather in the morning (e.g. strong rain, wind or swell) causing some seasickness.

The tour fleet had considerable excess capacity. There were 179 dedicated tourist vessels (expandable to 237 vessels if necessary), but on average, the maximum number of tourist vessels per day was only 34.5 (se $\pm$ 6.29; ranging from 4 to 98 vessels), or 19% of the total tourist fleet capacity. On a typical day, a tourist might have experienced an average of 16 boats (se $\pm$ 1) around a group of dolphins. On an average, the boat would have been a minimum distance of 24.4 m (se $\pm$ 1.6) to the dolphins.

Characteristics of the tourists

Over 23 survey days in the 2008 High Season, we sampled 572 tourists from 26 countries in Kalibukbuk using our beach attendance survey. Almost 72% were westerners, followed by 27% Asians. There were more females than males (54%–46%). Most were aged 16–35 years (51%). However, the industry also attracted older people (>65 years, 7%) and children (12%). The average length of stay in Lovina was 2.9 nights. Over 36 survey days in the Low Season, we recorded 1472 tourists in the two main ports, Kalibukbuk and Aneka. More than 88% of them (1299) were foreigners; domestic tourists comprised only 11.8% (173) of the total. As in the High Season, there were more females than males (54.3%–45.7%).

A total of 123 questionnaires (98 in English, 25 in Indonesian) were completed during the High Season (June–September 2008). In the Low Seasons (February–April 2009 and December 2009), we collected a further 264 questionnaires (208 in English and 56 in Indonesian), making 387 completed questionnaires (306 in English and 81 in Indonesian). We asked the tourists to fill in the questionnaires regardless of whether they saw the dolphins during the trip. We approached 533 potential respondents, giving a total response rate of 72.6%. More than 90% of total respondents said they had seen dolphins.

Consistent with the beach attendance survey, slightly more females responded to our questionnaires than males (Table 1). Respondents ranged in age from 13 to 71 years, although almost 40% were 26–35 years old. They came from 30 countries, with over two-thirds westerners and the rest Asians. Almost 90% of the westerners came from Europe; 60% of these were Dutch, French, German or British. Over 65% of Asian tourists were domestic; the remaining 25% were Malaysian, Chinese or Singaporean. More than half the respondents had had previous interactions with dolphins *prior to* coming to Lovina; more than 75% of these were westerners.

Table 1. The respondents to the dolphin tourism surveys administered in Lovina, Bali.

	High season value (%)	Low season value (%)	Total value (%)
N respondents (Response rate)	123 (31.8)	264 (68.2)	387 (100.0)
	Language of the questionnaire		
N	123	264	387
English	98 (79.7)	208 (78.8)	306 (79.1)
Indonesian	25 (20.3)	56 (21.2)	81 (20.9)
	Gender		
N	108	242	350
Female	58 (53.7)	116 (47.9)	174 (49.7)
Male	50 (46.3)	126 (52.1)	176 (50.3)
	Age (year)		
N	109	224	333
Mean individual age	34.5	36.3	35.7
Modal age group	26–35 (38.5)	26–35 (37.1)	26–35 (37.5)
Range	13–69	14–71	13–71
	Highest education level		
N	112	244	356
Pre and high school	28 (25.0)	62 (25.4)	90 (25.3)
College and uni	62 (55.4)	121 (49.6)	183 (51.4)
Postgraduate	22 (19.6)	61 (25.0)	83 (23.3)
	Nationality types		
N	116	252	368
Western countries**	81 (69.8)	165 (65.5)	246 (66.8)
Asian countries ***	34 (29.3)	87 (34.5)	121 (32.9)
Latin American	1 (0.9)	0	1 (0.3)
	Previous interaction with wild dolphins		
N	116	248	364
Yes	66 (56.9% to N)	122 (49.2% to N)	188 (51.6% to N)
Western	53 (80.3% to "Yes")	91 (74.6% to "Yes")	144 (76.6% to "Yes")
Asian	12 (18.2% to "Yes")	35 (28.7% to "Yes")	47 (25% to "Yes")
Latin American	1 (1.5% to "Yes")	0	1 (0.5% to "Yes")

Note:
*Response rate = 72.61% for both seasons.
**Western countries: Netherlands, France, Germany, United Kingdom, Denmark, Australia, United States, Austria, Belgium, Sweden, Switzerland, Canada, Finland, Norway, Czechoslovakia, Ireland, Russia, Poland, Lithuania, Bosnia, and New Zealand.
***Asian countries: Indonesia, Malaysia, China, Singapore, India, Taiwan, Thailand, and Japan.

Respondents learned about the dolphin tours in Lovina from various sources. Word of mouth (friends, family, the locals, etc.) was the main source (over 35% of respondents), although printed information (e.g. guide books and brochures – 31.8%) and Internet (15.2%) also played an important role. Word of mouth was a more important source of information for Asian respondents (65%, $n = 103$) than western respondents ($n = 197$) who mostly learned about the dolphin tours from the Internet (12.7%) and printed information (42.6%). However, 33% of westerners received their initial information about the dolphin tours in Lovina by word of mouth, indicating that this method was a powerful tool for information dissemination.

Almost 40% of respondents joined the dolphin trip because they wanted to see the animals up close (65.7% westerners, 31.5% Asians); another 29% joined out of curiosity (55.9% westerners, 37.9% Asians). A small proportion (8.4%) of respondents joined the

trip because they had seen dolphins in captivity, and now wanted to see them in the wild. General log linear analysis found no significant association between the reasons for joining the trip and nationality type (Pearson χ^2 $p = 0.313$, d$f = 5$, $\alpha = 0.05$). Almost 75% of respondents were tertiary educated (undergraduate and postgraduate) (Table 1).

Information relevant to industry sustainability

Tourist satisfaction (Question 2)

Satisfaction benchmarking. The satisfaction scores were analysed in the context of the international satisfaction benchmarking study of Pearce (2006), whereby average scores <7.1 are considered less than satisfactory (low), average scores 7.1–7.8 are moderate/medium and average scores >7.8 are good. Pearce (2006) also used the categorisation of Hanan and Karp (1989) who considered the satisfaction level high when 85%–90% of the scores were >8. When 70%–80% of scores are 8–10, the satisfaction is considered medium; when 60% or fewer responses were 8, 9 or 10, satisfaction is considered low.

The average satisfaction level of dolphin tourists in Lovina was 7.1 (se $\pm$ 0.11, on a scale of 1–10) and about 51% of respondents provided a score of 8–10 ($n = 354$). These values place the satisfaction of the dolphin tourists between low and medium on the Pearce and Hanan-Karp scales (Pearce, 2006). The opinions of western respondents were diverse (Figure 3); scores ranged from 1–4 (9.2% of respondents) to 8–10 (40.2%).

Nonparametric analyses (Table 2) showed that satisfaction level was unaffected by field season, gender, education group, sea state, number of boats around, whether the respondent had seen or interacted with the dolphins before, and whether he or she came from developing or developed countries. No significant difference was found between the satisfaction of western and Asian respondents.

The Kruskal Wallis tests (Table 2) showed that encounter management was the only one of these variables that was significant for both western and Asian respondents. However, subsequent analyses indicated that the underlying variables that made the encounter management important for westerners may be different from those that influenced Asian tourists. However, we could not ascertain different variables between the two nationality types due to the small fraction of Asian samples.

Multiple regression tree analyses revealed that encounter management and the number of dolphins seen during the trip were the most important variables for western respondents and all respondents combined (Table 2). However, as with the univariate Kruskal–Wallis analyses, encounter management per se was the only variable important for Asian respondents.

Stepwise regression ($18\% \leq R^2_{\mathrm{CV}} \leq 43.3\%$) suggested that encounter management was the most important variable associated with satisfaction for all respondents (Table 3). An increase in the number of dolphins buffered the satisfaction of all respondents against poor encounter management. However, a separate analysis of western respondents showed that respondents who felt uncomfortable with the way the boatmen managed the encounters had lower satisfaction levels despite seeing many dolphins. Conversely, westerners' satisfaction level was higher even if a low number of dolphins were observed, provided that they felt comfortable with the way the boatmen managed the encounters.

Satisfaction drivers: thematic analysis. We asked the tourists to identify the features of the experience that they liked the most; many respondents gave more than one answer. The respondents most often named the dolphins (55% responses from westerners, 62.8% responses from Asians). A female western tourist described the highlight of her dolphin

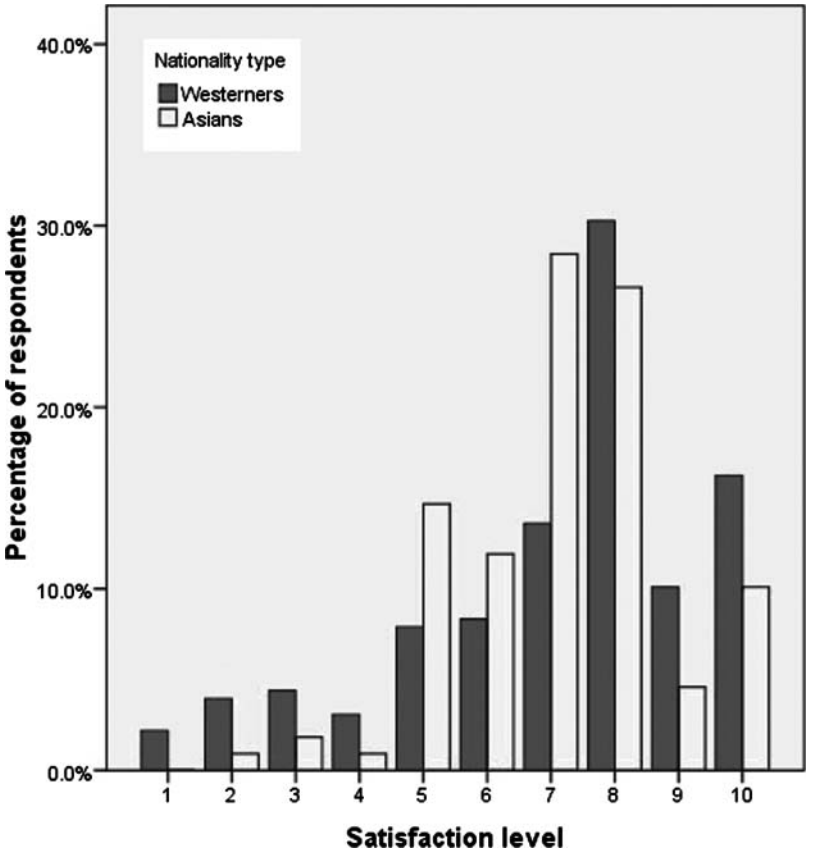

Figure 3. Distribution of satisfaction levels with dolphin watching tourism at Lovina, Bali according to nationality type.

experience as "Seeing them swim around, freely, in captivity they act differently". A male westerner liked the dynamics of the dolphins ("The sound of the dolphins as they jump out of the sea"). A male Asian respondent said Lovina was the best location for dolphin watching ("I have [gone to] many countries, it is no 1 in the world").

The positive feature next most likely to be mentioned was the scenery, e.g. the sunrise, the sea and the hills (12.5% responses from westerners, 9.3% responses from Asians), and the traditional boats (12.5% responses from westerners, 5.8% responses from Asians). Others liked the serenity of the experience ("The way the dolphins swim, quietly, easily, like the boats aren't there"; "The peacefulness of being in the little boat early in the morning"). A female western respondents particularly liked the authentic experience of the traditional boat ("The boat ride, I love the authentic fishing boats"). In addition to the boat and the dolphins, the breakfast served on the boat also impressed a male westerner ("the boat trip, dolphins and the tea we got").

We also asked our respondents what they disliked the most about of the trip. Again, many respondents gave more than one answer. Respondents disliked: (1) the mismanagement of boats in Lovina, e.g. the many boats around, the boats chasing the dolphins, boats coming too close to the dolphins (61.6% responses from westerners, 11.9% responses from Asians); (2) the often prolonged time, travel distance and effort taken to find the dolphins

Table 2. Variables significantly associated with the satisfaction level of tourists who went dolphin watching at Lovina (data from Low and High Seasons combined).

	Dolphin-related variables (Kruskal–Wallis (KW) $\alpha = 0.05$ and Mann–Whitney *post hoc*)			Aspects of the trip (Kruskal–Wallis and Mann–Whitney $\alpha = 0.05$)		
Nationality of respondent	*Number of dolphins*	*Preferred number of surrounding boats*	*Distance management*	*Reason for joining the trip*	*Time management*	*Encounter management*
All	KW $p < 0.0005$, $df = 4$, $n = 337$ Satisfaction increased with dolphin group size	KW $p = 0.002$, $df = 2$, $n = 324$ Satisfaction decreased if respondents' preferred number of surrounding boats were 10 or less	KW $p = 0.011$, $df = 4$, $n = 228$ Satisfaction highest when the distance was "about right"	KW $p = 0.04$, $df = 5$, $n = 340$ Those who wanted to see dolphins at close distances were most satisfied	KW $p < 0.0005$, $df = 4$, $n = 232$ Satisfaction highest when respondents felt the right amount of time was spent watching the dolphins	KW $p < 0.0005$, $df = 3$, $n = 231$ Satisfaction increased as comfort level increased, highest when respondents were very comfortable with the way the boatmen managed the encounter
Westerners	KW $p = 0.02$, $df = 3$, $n = 156$ Satisfaction increased with dolphin group size	KW $p = 0.002$, $df = 2$, $n = 204$ Satisfaction decreased if respondents' preferred number of surrounding boats were 10 or less	KW $p = 0.066$, $df = 4$, $n = 146$ *Not significant*	KW $p = 0.005$, $df = 5$, $n = 218$ Those who wanted to see dolphins at close distances were most satisfied	KW $p = 0.009$, $df = 4$, $n = 149$ Satisfaction highest when respondents felt the right amount of time was spent watching the dolphins	KW $p < 0.0005$, $df = 3$, $n = 148$ Satisfaction increased as comfort level increased; highest when respondents were very comfortable with the way the boatmen managed the encounter
Asians	KW $p = 0.109$, $df = 3$, $n = 88$ *Not significant*	KW $p = 0.299$, $df = 2$, $n = 106$ *Not significant*	KW $p = 0.056$, $df = 4$, $n = 73$ *Not significant*	KW $p = 0.114$, $df = 5$, $n = 107$ *Not significant*	KW $p = 0.157$, $df = 4$, $n = 74$ *Not significant*	KW $p = 0.009$, $df = 3$, $n = 74$ Satisfaction increased as comfort level increased, highest when respondents were very comfortable with the way the boatmen managed the encounter

Note 1: Shadow areas refer to significant variables
Note 2: Variable groups:
Number of dolphins: 1–10; 11–20; 21–30; 31–40; >40
Preferred number of surrounding boats: 1–5; 6–10; >10
Reason for joining: curiosity; friend/family/spouse asked me; just looking for something to do; wanted to see the dolphins at close distance;wanted to see the dolphins in the wild; others
Distance management: –2, –1, 0, 1, 2 ("far too close" to "not nearly close enough")
Time management: –2, –1, 0, 1, 2 ("much too much" to "much too little")
Encounter management: –1, 0, 1, 2 ("very uncomfortable or uncomfortable" to "very comfortable")

Table 3. The most important variables associated with satisfaction with the dolphin tourism experience at Lovina and the aspects of the experience that respondents disliked the most.

	Most important variables associated with tourist satisfaction (low season only)		
Nationality	*Multiple regression tree (see also Figure 4 in the online supplementary material)*	⟶ *Stepwise regression*	Aspects of the trip that respondents disliked the most (General log linear $\alpha = 0.05$)
All	Encounter management and the number of dolphins seen	Satisfaction = 4.757 + (0.503 × dolphin) + (1.086 × encounter) Encounter management was the most important variable. A respondent who felt uncomfortable with the way the boatman managed the encounter would have lower satisfaction level. However, an increase in the number of dolphins can prevent the satisfaction from declining too much ($R^2_{CV} = 35.6\%, p < 0.0005$).	Pearson $\chi^2 < 0.0005$, d$f = 2$, $n = 223$. See cells below for the most significant variable(s) and the odd ratio for both nationality groups.
Westerners	Encounter management and the number of dolphins seen	Satisfaction = 3.053 − (0.387 × dolphin × encounter) + (0.956 × dolphin) + (2.593 × encounter) Encounter management was the most important variable. A respondent who felt uncomfortable with the way the boatman managed the encounter would have lower satisfaction level even if a high number of dolphins were observed. Conversely, the satisfaction level was higher even if a low number of dolphins were observed, provided that the encounter was comfortable ($R^2_{CV} = 43.3\%, p < 0.0005$).	Boat mismanagement (i.e. coming too close to dolphins, chasing the animals, engine too noisy, too many boats around). Odds ratio Westerners: Asians = 8.33
Asians	Encounter management	Satisfaction = 6.324 + (0.842 × encounter) Tourists were more satisfied when they felt comfortable with the way their boatmen managed the encounters ($R^2_{CV} = 18\%, p = 0.002$)	Difficulty finding the dolphins or dolphins not behaving as expected Odds ratio Asians: Westerner = 3.33

(5.5% responses from westerners, 32.2% responses from Asians). Western respondents particularly were displeased by the noisy boats and boats that came too close to the dolphins. Some respondents considered that the dolphins were disappointing (e.g. too few, not playful, or even not seen at all – presumably because of the many boats obstructing the view). Garbage in the sea and on the beach was a problem for tourists from both nationality groups. Other features disliked by respondents were bad weather, waking up early in the morning, seasickness, persistent souvenir sellers on the beach and the long and uncomfortable trip.

General log linear analysis showed no association between respondents' nationality type (westerners vs. Asians) and the aspects of the experience that they liked the best (Pearson χ^2 $p = 0.271$, d$f = 3$, $\alpha = 0.05$). However, the aspects that respondents disliked the most varied with nationality type (Table 3). Western respondents were more likely to dislike the mismanagement of boats in Lovina (i.e. boats coming too close to the dolphins, chasing the animals, the engine too noisy, or too many boats – westerner to Asian odds ratio 8.33:1). On the other hand, Asian respondents were more likely to dislike the difficulties of finding the dolphins or when the animals were not plentiful or playful (Asian to westerner odds ratio 3.3:1).

Willingness to rejoin and recommend the trip (Question 3)

A respondent's satisfaction level was significantly associated with willingness to experience dolphin watching in Lovina again (Kruskal–Wallis $p < 0.0005$, d$f = 9$, $\alpha = 0.05$) and their willingness to recommend the dolphin trip in Lovina (Kruskal–Wallis $p < 0.0005$, d$f = 9$, $\alpha = 0.05$).

We divided the scores for the questions concerning how their boatmen managed the encounter into two groups: (1) very uncomfortable and uncomfortable and (2) neutral to very comfortable. When examined against the nationality type, the associations between encounter management and the willingness to recommend the trip were significant (Figure S2; see online supplementary material). Western respondents who rated their feelings about their encounter as neutral to very comfortable were significantly more likely to promote the tour. Our data are insufficient to conclude any significant association between willingness to recommend and encounter management for Asian respondents.

We also separated respondents who did not want to rejoin the trip *and* who did not want to recommend the trip to others ($n = 28$) from those who were willing to rejoin and recommend the trip to others ($n = 124$). General log linear analysis gave no significant association between nationality types and encounter comfort levels for the first group. However, all western and Asian respondents who were willing to rejoin and recommend also rated their feelings about their encounters as neutral to very comfortable (Pearson χ^2 $p < 0.0005$, d$f = 1$, $\alpha = 0.05$).

Discussion

Our results showed that the variables contributing to the satisfaction levels of westerners were different from those of Asian tourists (Question 1). Such knowledge is important for the management of the industry, especially in developing countries like Indonesia. We discuss the implications of our results (i.e. Questions 2 and 3) below.

The tourists and their satisfaction

Although Lovina is not yet an established ecotourism destination, our respondent profile was consistent with that of ecotourists (Eagles, 1992; Tao, Eagles, & Smith, 2004; Wight,

2001). Dolphin watching tourism at Lovina attracts mostly highly educated tourists who join the dolphin trips because they want closer interactions and learning experiences with dolphins in a natural setting. The environmental values of dolphin watching tourists in Lovina are also reflected in their satisfaction with the experience that ranged from low to medium (Pearce and Hanan-Karp scales [Pearce, 2006]). In comparison with seven terrestrial wildlife attractions in West Africa and two marine wildlife attractions in South-East Asia (Table 4), visitor satisfaction was in the lower range, although it still outranked visitor satisfactions at Mt Kilimanjaro and Arusha National Parks in Tanzania.

Although there was no significant difference between the satisfaction levels of our western and Asian respondents, there were important similarities and differences in the variables contributing to their satisfaction. The way the boatman managed their encounters was of concern to both westerners and Asians. Additional management and trip-related variables were associated with the satisfaction levels of western tourists only, such as the number of dolphins they saw and the number of boats they would have liked around them.

The westerners were concerned about what they perceived as mismanagement of the dolphin watching vessels. Examples of mismanagement were their tendency to speed (23.8% of western respondents) and the dolphins being surrounded by a large number of boats (29.3% of western respondents). This result accords with the increased sensitivity of western tourists to overcrowding compared with their Asian counterparts (Gillis, Richard, & Hagan, 1986; Yagi & Pearce, 2007) and a generally higher awareness on animal welfare among western societies (Shani & Pizam, 2008). Our unpublished data on the interactions between the dolphins and the boats showed that the number of boats in an encounter usually exceeded the number of dolphins (spinner to boat = 0.8 to 1, Mustika, 2011), which may help to explain the low to medium satisfaction level.

Although the observed number of boats were not significantly associated with the satisfaction level of western respondents, the preferred number of surrounding boats were. Western respondents' satisfaction levels were lower when their preferred number of surrounding boats was 10 or fewer; more than 80% preferred having no more than 10 boats around. Our biological survey indicated that a tourist has 95% chance of seeing 22–47 boats (mean 34.5, se $\pm$ 6.29) on any given day. Thus, the likelihood of a western tourist being satisfied with this situation is low.

Overall, western respondents were more concerned about the environmental management of the dolphin watching industry in Lovina than their Asian counterparts. Akama (1996) also found that western tourists were more concerned about environmental issues associated with wildlife tourism in Kenya than their local counterparts. Despite these results, Tao et al. (2004) and Jin (2009) both observed increasing environmental awareness among Asian visitors participating in nature-based tourism, suggesting that Asian tourists are likely to be increasingly sensitive about these issues.

The satisfaction level of western respondents was also significantly linked to their willingness to recommend the dolphin trip to others: the more comfortable they felt with the management of their encounters, the more likely it was that they would recommend the trip. This tendency is important because more than 65% of visitors in Lovina come from western countries; many of them had learned about the dolphin tour in Lovina from word of mouth. For all respondents, high levels of comfort with how their encounters were managed were also significantly associated with their tendency to repeat the visitation or recommend the trip. This information should be an incentive for the boatmen to drive their boats more considerately around the dolphins, even if they are not concerned about the possible impact on the animals.

Table 4. Comparison of the satisfaction levels of visitors to nine wildlife-viewing attractions in developing countries.

Name	Location	Western visitors (%)	Original satisfaction	Standardised satisfaction (score out of 10)	Satisfaction level according to the qualitative scale developed by Pearce (2006)
Ngorongoro Conservation Area	Tanzania (Okello & Yerian 2009)	64	8.75 of 10	8.75	High
Bali Hai Cruises dolphin watching	Bali, Indonesia (Bali Hai Cruises official data, pers.comm to the Director of Operations)	57.9	87.4% ('good' on Bali Hai rank)	8.74	High
Serengeti National Park	Tanzania (Okello & Yerian 2009)	64	8.68 of 10	8.68	High
Tsavo West National Park	Kenya (Akama 1996)	60	76.9% between 6 and 7 (scales 1–7)	76.9% scoring between 8.6 and 10	High
Lake Manyara National Park	Tanzania (Okello & Yerian 2009)	64	8.05 of 10	8.05	High
Sipadan diving sites	Malaysia (Musa 2002)	24.5	87.8% between 4 and 5 (scales 1–5)	87.8% scoring between 8 and 10	High
Tarangire National Park	Tanzania (Okello & Yerian 2009)	64	7.84 of 10	7.84	High
Lovina dolphin watching	Bali, Indonesia (this publication)	70	7.1 of 10	7.1, with 51% scoring 8 to 10	Low to medium
Arusha National Park	Tanzania (Okello & Yerian 2009)	64	7.00 of 10	7.00	Low to Medium
Mt. Kilimanjaro National Park	Tanzania (Okello & Yerian 2009)	64	6.60 of 10	6.60	Low

Implications for dolphin tourism in Lovina (Question 3)

Our results indicate that the dolphin watching industry in Lovina is a promising attraction for international tourists. However, it is not yet managed according to established best international practice. The industry provides a lucrative income for comparatively low-skilled local people. If the industry is to be sustainable in the long term, the boatmen need to change their practices to improve the tourist satisfaction level and improve tourists' likelihood of repeat visitation or recommending the trip to others.

Our results also showed how much the western respondents enjoyed the local traditional *jukung* (Figure 1). A unique element of the dolphin tour, the *jukung* has the potential to be promoted as an integral part of dolphin tourism in Lovina to: (1) increase the authenticity of the experience, a factor identified by Pearce and Moscardo (1986) as very important in deciding a tourist's satisfaction level and (2) dilute the focus of the experience on the dolphins themselves.

Nonetheless, relying on visitor opinions and satisfaction level alone will not be enough to propel dolphin watching in Lovina in a more sustainable direction. Codes of practice and agreed regulations (see Allen, Smith, Waples, & Harcourt, 2007; Carlson, 2010; Garrod & Fennell, 2004), full commitment and compliance from all boatmen (and supporting stakeholders e.g. travel agents) and mechanisms to address the excess vessel capacity such as licencing are needed (see Caitlin, Jones, & Jones, 2012; Mustika, 2011). Coordinated actions by the community and the local and national government will also be important because inconsistent policies will hinder or even halt any conservation efforts. A recent example of the problems associated with such inconsistency is the breakdown of management of tourism focused on the Irrawaddy dolphin (*Orcaella brevirostris*) in Cambodia. After four years of increasingly successful community–based management, the central government intervened and prohibited any foreign researchers and NGOs from participating in conservation efforts (Beasley, Bejder, & Marsh, 2010). As the result of this government intervention, foreign researchers and NGOs can no longer participate in the conservation of Irrawaddy dolphins in Cambodia. Excellent communication among researchers, NGO workers, tour operators and government officials will be central to the development of sustainable dolphin watching in Lovina.

Implication for cetacean tourism research and management (Question 4)

Experts have become increasingly vocal about the need to regulate whale and dolphin watching activities (Brownell & Oosthuizen, 2004; Constantine, et al., 2004; Corkeron, 2004; IWC, 2009; Orams, 2000). As a result, the International Whaling Commission endorsed the implementation of codes of practice in countries that participate in cetacean watching (Carlson, 2010). The codes of practice typically cover minimum approach distance, maximum number of boats around the animals at any given time, maximum time allowed around the animals and speed and angle of approach (Carlson, 2010; Garrod & Fennell, 2004).

Based on the data from O'Connor et al. (2009), developing countries with whale watching industries now outnumber developed countries with similar industries (38.5% of developed countries/territories and 54.7% developing countries). Indonesia is included in the list of developing countries participating in the cetacean watching industry (Hoyt, 2001; O'Connor, et al., 2009). Prior to this research, some guidelines were suggested for the local Irrawaddy dolphins in East Kalimantan (Danielle Kreb, 2011, personal communication) and the dolphin watching in Lovina (by Apex Environmental, Gouyon, 2005). However,

no national regulation on cetacean watching has been issued for Indonesia. In addition, because developing countries such as Indonesia have limited capacity to deliver effective compliance (see Laurance, 2004; Smith, Muir, Walpole, Balmford, & Leader-Williams, 2003), this trend calls for the strategic use of ecological, social and economic data to support arguments for better cetacean watching management.

Lovina was established as a bottom-up community initiative without government intervention. This paper does not compare the practices in Lovina with best practices in other parts of the world (see Mustika [2011] for this information). Nevertheless, input from the tourists indicated that this industry is an example where cetacean tourism has not followed best practice principles that are standard in most developed countries. This situation has the potential to cause significant disturbance to the local cetacean population and, with at least 60% overnight visitors in Lovina joining the dolphin tours (Mustika, 2011), a decline in tourist satisfaction that could harm the current tourist industry.

Other authors have advocated an integrated approach that combines biological research with the management aspects of the industry (Allen, et al., 2007; Corkeron, 2006; Wiley, Moller, Pace, & Carlson, 2008). However, very few researchers have used economic outcomes (Hoyt, 2001; O'Connor, et al., 2009; Orams, 2002) and tourist experiences (Kessler & Harcourt, 2010; Orams, 2000; Valentine, Birtles, Curnock, Arnold, & Dunstan, 2004) as the basis for management improvements. This paper is one of the first to examine tourist experiences associated with cetacean tourism (including both cetacean watching and swim-with-cetaceans) in a developing country and adds to the works of Kessler & Harcourt (2010) in Tonga.

More research is needed to understand the human dimensions of cetacean tourism, especially in developing countries. Better understanding of the tourist experience (e.g. demography, motives and satisfaction level) is crucial to the evidence base for sustainable management of marine wildlife tourism in such places. Research on the tourist experience (e.g. tourist satisfaction and opinions) coupled with research on the economic and managerial aspects of the industry is not only likely to be significantly cheaper than ecological research but is also likely to be seen as more relevant to local stakeholders. Involving social scientists in cetacean tourism research will greatly increase its potential to influence managers and decision-makers of the need to implement the precautionary principle in sustainable management decisions.

Tourism is often used to promote alternative livelihoods and enhance environmental conservation in developing countries (Van Egmond, 2007). However, environmental managers (both in developed and developing countries) typically have limited understanding of the human dimensions (Van Egmond, 2007). This deficiency may lead to inappropriate strategies for management as well as marketing. We urge researchers who are interested in wildlife tourism in developing countries to conduct more studies on the human dimensions of tourism including both the tourists (demographics, attitudes, experiences and perceptions) and on the social and cultural domains of the local stakeholders (especially in this case the Lovina boatmen) to fill this significant gap.

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Note

1. We define developing countries as countries with a medium to high Human Development Index 2010 as recorded by United Nations Development Programme (http://hdr.undp.org/en/statistics/).

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