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Dolphin Watching in the Southern Tañon Strait Protected Seascape, Philippines: Issues and Challenges

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ABSTRACT

Dolphin watching is a growing economic activity in the southern Tañon Strait Protected Seascape (TSPS), the Philippines, an area that is also heavily exploited by fisheries. In order to examine the issues and challenges in this growing industry, we monitored relevant information regarding cetacean watching, conducted focus group discussions (FGDs) and educational seminar-workshops for various local stakeholders from 2004 to 2006, and followed these up from 2008-2012. From 9 May to 16 August 2004, we conducted structured interviews to determine the perceptions of cetacean-watching tourists (CWTs) and assess the level of local knowledge of fishers and non-fishers (NFs) regarding marine mammals and environmental management in this area. Ninety five (95) CWTs, 100 local fishers, and 64 NFs were interviewed. Sixty seven percent

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(n=64) of the CWTs believed that the overall quality of tours was impressive primarily because they were able to watch, at reasonable costs, large groups of dolphins in close proximity and in an almost pristine environment. The majority of CWTs (~91%) felt that there is a need to develop a 'Special Management Plan' (SMP) for the southern TSPS focusing on cetaceans and their habitats. The increasing number of dolphin watching boats, heavy exploitation of fishing ground, misperception of local fishers that cetaceans are competitors with fisheries, and lack of a SMP or a Management Plan *per se* for TSPS warranted the facilitation of a participatory management process to protect the cetaceans and their habitats. This study has shown that even with only preliminary results, survey interviews of key stakeholders in combination with FGDs and seminar-workshop could be critical in facilitating a participatory management process. In the case of the TSPS, this participatory approach led to the formation of the Tañon Strait Association of Dolphin and Whale Watching Operators, Inc. (TaSADoWWI), and eventual development of cetacean watching protocols for the area. All of these highlight the importance of following a participatory process, empowering stakeholders, and monitoring relevant information (e.g., numbers of cetacean watching tourists, cetacean watching boats and its impacts, fisheries, dolphin behaviour and abundance) to ensure the long-term sustainability of dolphin watching and fisheries in southern TSPS area.

Keywords: Dolphin watching, cetacean watching, dolphins, whales, perception, participatory management process, fisheries, Tañon Strait, Philippines

INTRODUCTION

The Philippine archipelago is noted for the diversity of its marine organisms, particularly its coral reefs. However, its resident marine mammals, particularly cetaceans, are still an undervalued resource in the country. To date, there are 29 (28 marine and 1 estuarine) aquatic mammal species confirmed to inhabit Philippine territorial waters (Aragones 2008, 2013; Aragones and others 2010). This list includes 27 cetaceans, the dugong (*Dugong dugon*), a sirenian, and the Asian small-clawed otter (*Amblonyx cinereus*).

"Cetacean watching" is used in this paper as a collective term to refer to both whale watching and dolphin watching, since a growing number of people use these terms interchangeably. Globally, cetacean watching is a multi-billion dollar (USD) ecotourism industry (Goodwin 1996; Hoyt 2002; Corkeron 2004). In the Central

Visayas, it is a growing economic activity (Abrenica and Calumpong 2002). There are three areas in the Philippines where cetacean watching is currently offered: Tañon Strait, Bohol Sea (Abrenica and Calumpong 2002), and waters off Puerto Princesa, Palawan. Cetacean watching in the Bohol Sea is seasonal (primarily during April to July) and limited to Pamilacan and Balicasag Islands and adjacent coastal towns (i.e., Panglao and Baclayon). Tañon Strait, specifically in the southern section, is available year-round, but understandably contingent on weather conditions (Aragones and Keith 2004) (Figure 1). In 1995, cetacean watching in the Tañon Strait Protected Seascape (TSPS) was initiated by the government of Bais City, Negros Oriental. Cetacean watching boats usually embark from Bais City, located about 45 km north of Dumaguete City, the provincial capital of Negros Oriental (Figure 1).

To date, there have been very limited studies in the Philippines that examined the perception of cetacean-watching tourists (CWTs) (Rosales 2003) or the level of local knowledge possessed by fishers and non-fishers (NFs) regarding marine mammals, fisheries and their management, particularly for a protected seascape established for cetaceans. Understanding the different stakeholders' perceptions and knowledge is critical to the development of both conservation and management plans for this protected seascape. Crucial issues must be addressed, such as the growing perception among locals that dolphins and whales are a nuisance because they compete with fishers for fish and other marine resources (see Read 2005, for review of depredation by dolphins). Moreover, direct interactions between marine mammals and fisheries have been reported as one of the major threats to these animals worldwide (Read 2005). Also, dolphin and whale watching activities have been shown to have negative impacts on the animals' behaviors (Lusseau 2006; Arcangeli and Crosti 2009; Roque 2011). Furthermore, a clear set of implementable protocols for cetacean watching in the host areas has been wanting for some time now.

For the study site, the southern section of TSPS, the basic principles of stakeholder analysis, i.e., the process of identifying important individuals or groups that may be affected by any proposed activities (after Grimble and Chan 1995), were applied to recognize and enlist support from the key stakeholders. Structured interviews using questionnaires, and consensus building through focus group discussions and seminar-workshops, were conducted as part of a larger, ongoing study on the ecology of cetaceans in the southern section of TSPS. This paper presents the results of these interviews, as well as the challenges and issues in the area, and efforts toward a participatory management process that may serve as the basis for the development of policies that would improve and regulate cetacean watching tourism.

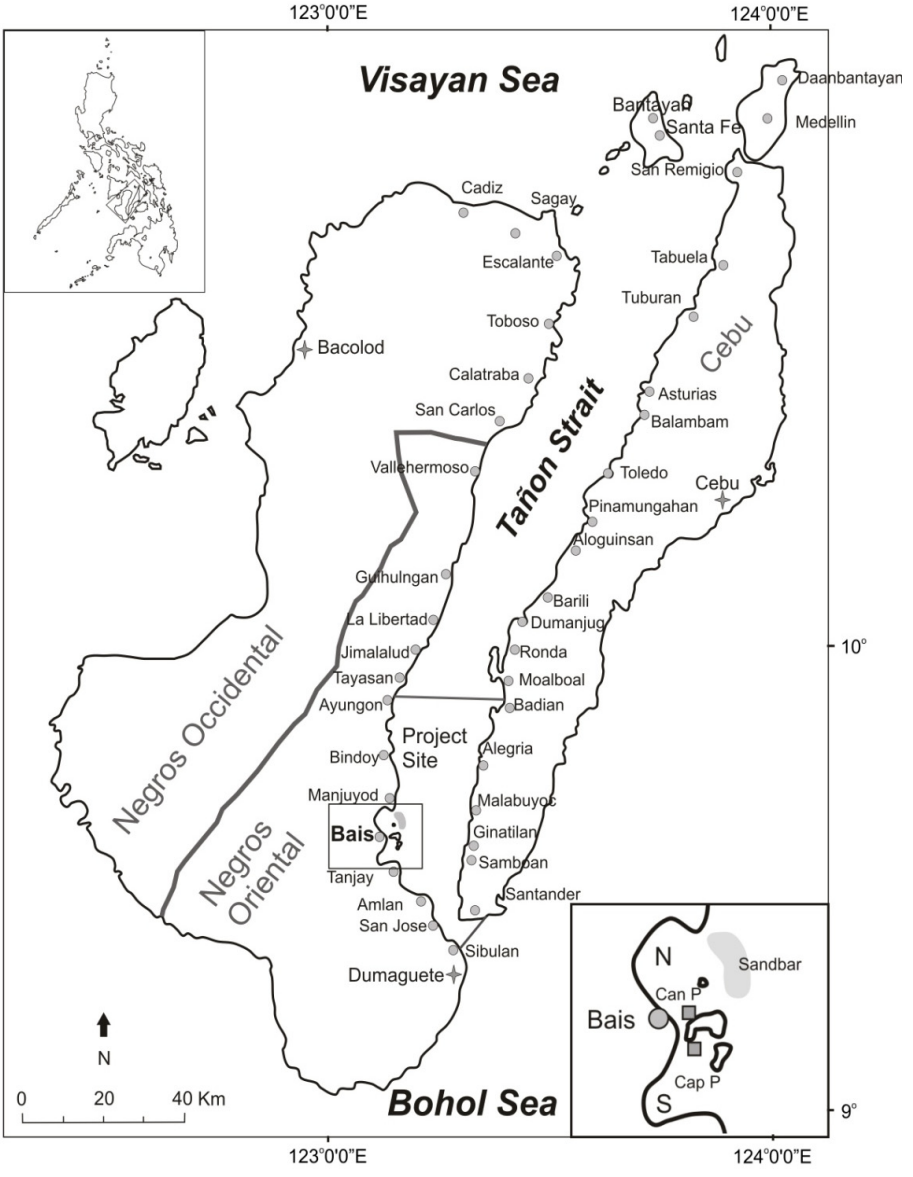

Figure 1. Map showing location of Tañon Strait, project site (southern Tañon Strait) and other relevant details mentioned in the text. Inset shows relative location of the North Bais Bay (N), South Bais Bay (S), 'Sandbar', Capiñahan Port (Cap P), and Cannibol Port (Can P).

MATERIALS AND METHODS

Study Site

Tañon Strait is predominantly a narrow but deep channel located between the islands of Negros and Cebu (Figure 1). The Strait is about 200 km long and connects the Visayan Sea to the Bohol Sea and is bordered by about 40 municipalities and cities (Figure 1). Based on fisheries data presented by Green and others (2004), Tañon Strait can be considered as one of the top 10 major fishing grounds in the Philippines. The southern section of Tañon Strait has been classified as very heavily exploited fishing grounds with >70 fishers per km (Green and others 2003). The high productivity of the Strait makes it a favorable cetacean habitat. Fourteen of the 29 marine mammals found in the Philippines have been recorded in this area (Aragones 2008, 2013; Aragones and others unpublished data) (see Appendix D for species listing). Also, Tañon Strait has the highest density of dwarf sperm whales (*Kogia sima*) among the surveyed waters in the Philippines (Dolar and others 2006). The diversity and abundance of cetaceans are the main reasons why Tañon Strait was declared as a Protected Seascape through a Philippine Presidential Order issued in 1998.

Interview Surveys

Specific sets of written interview questionnaires (Aragones and others 1997) were used to assess: (1) the perception or views of cetacean watchers in the southern TSPS, and (2) the level of knowledge of local fishers and (3) NFs regarding marine mammals, fisheries and pertinent environmental management. Interviews with cetacean watching tourists (CWTs) were conducted from 9 May to 16 August 2004, in Bais City, Negros Oriental. Interviews with the local fishers and NFs were conducted in Bais City, Negros Oriental and in Ginatilan, Malabujoc, and Alegria, all of which are part of the island province of Cebu. Interviews with local fishers and NFs were conducted from 9 May 9 to 15 June 2004, in Bais City while those in Cebu were done on 20 May 2004. The local cetacean watching tour guides assisted in administering all of these surveys. All interviewed tourists took only licensed and authorized tour boats (i.e., motorized boat or 'banca' = MBa) embarking from the Capiñahan Wharf, Bais City (Southern Bais Bay, Figure 1). Two tour boats were operated by the Bais City government (MBa Dolphin I & MBa Dolphin II), while a private group operated the third boat (MBa Dolly). At least one tour guide was aboard each cetacean watching boat. The total number of individuals per group or total number of family members was recorded to determine the average total

number of CWTs per boat. Only the head of a family or group leader for each group of tourists was asked to answer a questionnaire. Interviews and FGDs with local fishers and NFs were administered using the local language (*Cebuano*).

There were two sets of interview questionnaires. The first was for the CWTs and included questions that evaluated the respondents' dolphin watching experience. This used a four-point rating system (where 1 is not aware, 2 is poor, 3 is fair and 4 is good) patterned after the Likert scale (Likert 1932) to assess the CWTs' dolphin watching experience and their perception of the condition of local marine environment, among others.

The second questionnaire was for local fishers and NFs; it focused on these two sectors' level of knowledge regarding fisheries and cetaceans in the southern Tañon Strait area. All questionnaires included questions that asked demographic details to facilitate comparison across various demographic profiles (For a copy of the questionnaires, please email the corresponding author).

The questionnaire for NFs included similar topics covered for the fishers. The difference is that while the questionnaire for fishers had questions on fishing, that for NFs asked about their overall awareness of the marine environment. For example, instead of asking NFs about their length of fishing experience, their length of residence in the locality was asked in order to have some measure of their familiarity with the area. Similarly, instead of asking types of fish they catch, the kinds of fish they usually buy or eat were asked to gauge the NFs' knowledge of the local fisheries. As for their encounters with local marine mammals, NFs were asked if they observed them during their boat trips.

The survey responses were encoded in separate spreadsheets according to group. If the respondent neglected to answer a particular question, a column for "no answer" was added to account for these in the data analysis. The results were presented as frequency distributions expressed as percentages of total responses, noting that the sample sizes varied across questions. In relevant cases, one-way ANOVA was performed using SPSS (version 15.0, 2008) to test whether the total number of respondents varied significantly.

Dolphin Watching in Tañon Strait

We examined the dolphin watching operation by gathering relevant information including boat types used and their costs, as well as the number of boats that operated through time. To determine the cetacean watching tourists' arrivals, both

local and foreign, and the frequency of boat trips, data were collected from the 2007 to 2012 Philippine Coast Guard manifesto of Bais City. Data on cetacean watching tourists' arrivals prior to 2007 were unfortunately unavailable. The number of tourists were gathered and segregated into local and foreign. The number of boat trips and boat trips per cetacean watching operator were determined.

Environmental Awareness and Participatory Management

To enhance environmental awareness about cetaceans, several focus group discussions (FGDs) and environmental education seminar-workshops were conducted after the interviews. Identification of the important stakeholders was conducted following Grimble and Chan (1995). The first seminar-workshop on "Protocols for dolphin and whale watching" was held in Bais City on 21 August 2004 as requested by local government officials, since boat operators and crew indicated in the initial FGDs the absence of any cetacean watching protocols. A series of seminar-workshops were conducted the following year (1 and 14-15 June, and 12 October 2005) in Bais City for a larger audience that included local officials, fishers, and groups interested in cetacean watching (including resort owners) surrounding southern TSPS. The workshop held on 12 October 2005 discussed the development of management planning skills for surrounding cities and municipalities. Also, a seminar-workshop on 'tour guiding' for current and aspiring tour guides for dolphin watching was held in 17-18 August 2006.

RESULTS

Eight FGDs (n=8) and eight (n=8) seminars or workshops were conducted in the area to enhance the understanding of the major stakeholders on the need to protect and conserve not only the habitats of the dolphins and whales but also the entire system. A total of 95 heads of families or groups representing the CWTs in Bais City accomplished the interview questionnaires. The average family or group size was 13, and ranged from 2 to 20 people (e.g., parents plus their children, an extended family or group of friends). A total of 79 fishers and 36 NFs from Bais City, and 21 fishers and 28 NFs from Cebu were interviewed during the study period (Table 1). The sample sizes were uneven as it was difficult to gather local fishers, particularly in Cebu, because they were either out fishing or resting; for NFs, it was observed that there was not much interest among them to accomplish the questionnaires.

Socio-demographic Profile of Local Fishers, Non-fishers, and Cetacean Watchers

The age class distribution of the CWTs, local fishers and NFs respondents is summarized in Table 1. Among CWTs, 36% were 18-30 yrs old, with 23% each from the 31-40 and 41-50 yrs old groups. The oldest age class (>60 years old) had the least representatives in all of the three groups of interviewees.

Fishers interviewed in Bais City were either subsistence fishers or those employed mainly as crew for the purse seine fishing fleets based in Capiñahan, Bais City (Figure 2). In Cebu, 15 fishers (71%) in Malabujoc and six fishers (29%) in Ginatilan were interviewed. As for the NFs, 23 were from Malabujoc consisting of 21 residents (75%) and two (7%) from the nearby town of Alegria, and five (18%) from Ginatilan. For simplicity, these groups will be referred to here as fishers and NFs from Cebu.

All but one of the fishers interviewed were male; the lone female fisher was from Bais City (Figure 2). Most of the fishers had at least some primary (elementary) and secondary (high school) education. Most of those from Bais City (82%, n=65) and Cebu (90%, n=19) claimed that fishing was their primary occupation (Table 2). A considerable proportion of the fishers interviewed in Bais City (41%, n=32) and Cebu (52%, n=11) have been engaged in fishing for more than 20 yrs (Figure 2).

There was an almost even distribution between female and male respondents among the NFs interviewed (Figure 2). The NFs mainly had secondary to tertiary (college) education. Their primary jobs varied (Figure 2). Some were employees,

Table 1. Percentage distribution of respondents according to age*

Sector	Age bracket (yrs old)					
	18-30	31-40	41-50	51-60	>60	Total (n)
Cetacean watching tourists	36 (34)	23 (22)	23 (22)	16 (15)	2 (2)	(95)
Local Fishers						
Bais City	24 (19)	24 (19)	20 (16)	23 (18)	9 (7)	(79)
Cebu	19 (4)	38 (8)	19 (4)	24 (5)	--	(21)
Local Non-Fishers						
Bais City	56 (29)	22 (8)	8 (3)	8 (3)	6 (2)	(36)
Cebu	21 (6)	21 (6)	21 (6)	26 (7)	11 (3)	(28)

*Note: Figures in parentheses represent raw frequencies

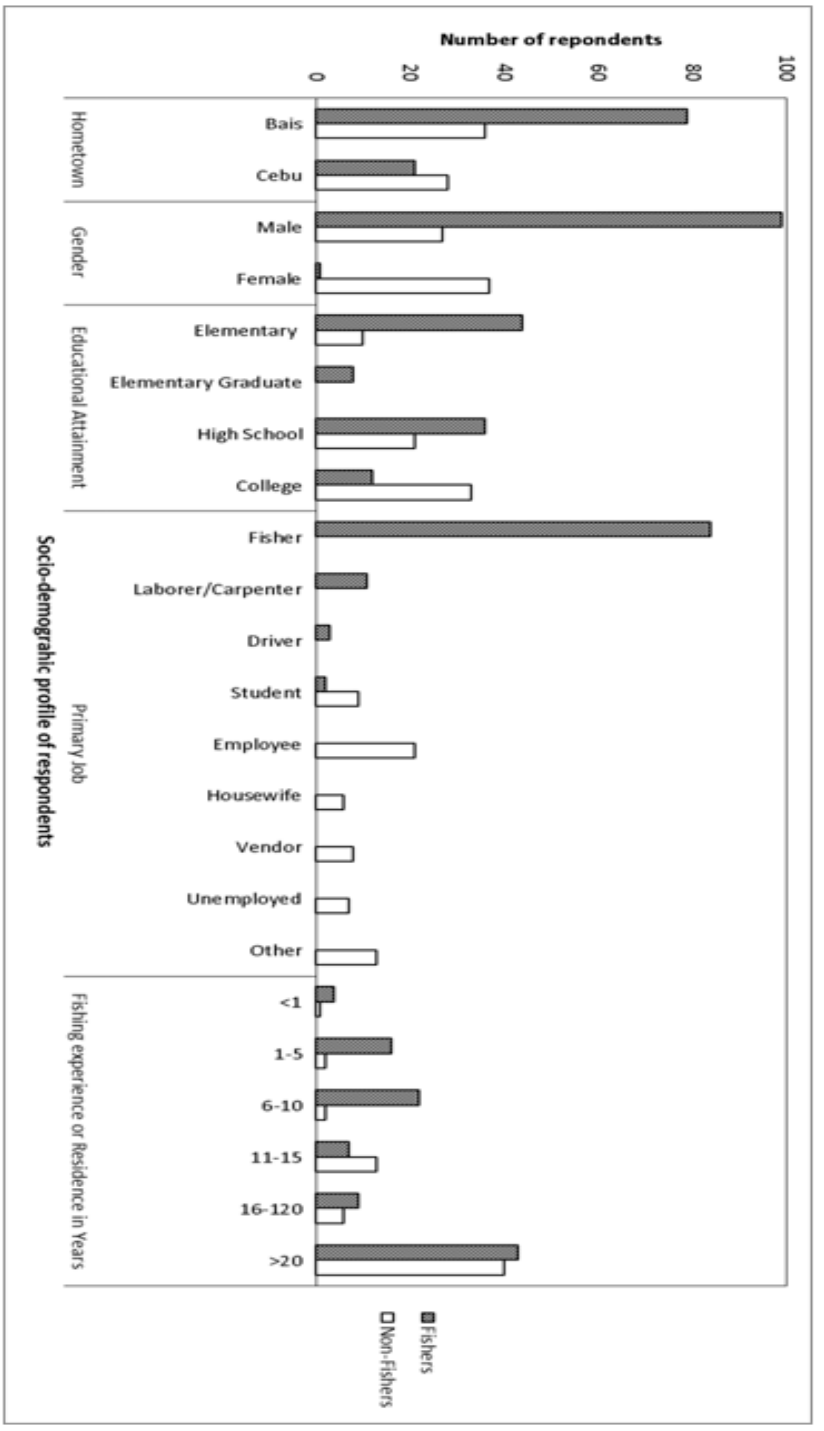

Figure 2. The socio-demographic profile of fishers and non-fishers interviewed from 9 May to 15 June 15 2004 showing hometown, gender, educational attainment, primary job, and number of years of experience or residence in the area. Those from Malabujoc and Alegria were lumped together, representing Cebu. See text for more details.

while others were students (25% in Bais City only) and vendors (29% in Cebu only). A number of local medical doctors, nurses, priests and businessmen were interviewed, and they were accounted for in the category 'Other'. Majority of the non-fishers have been residing in their localities for more than 20 years (Figure 2).

Most of the CWTs came from the province of Negros Oriental (39%) (Table 2), but the adjacent provinces of Cebu (16%), Negros Occidental (11%) were also represented in the sample. The rest are divided among those coming from other countries (16%), the National Capital Region (8%), and other parts of the country (10%). Most of the tourists interviewed were married (Table 2), and 39% of them were single (39%). Most of the CWTs belonged to the highest income bracket (>500,000 Philippine Pesos/ PhP per annum) (Table 2); however, 11% belonged to the lowest income bracket (<50,000 PhP per annum) and 14% of interviewees were either unwilling or unable to provide information about their income. In terms of the number of times the tourists have gone cetacean watching, most were first timers (75%) (Table 2). The respondents' main source of information on cetacean watching varied, although their friends or relatives were the most cited (50%) sources (Table 2).

Most of the CWTs believed that the overall condition of Tañon Strait was still good (50%) to fair (42%) (Figure 2). Similarly, most of them believed that there was good (44%) to fair (40%) levels of protection given to marine mammals in the Strait (Figure 3). However, their perceptions about Tañon Strait differed significantly from their perceptions about the overall condition of marine habitats in the Philippines (t = 3.760, df = 3, p = 0.033). Specifically about half (~47%) of the respondents believed that the overall condition of marine habitats in the Philippines was fair (Figure 3), and only about 28% rated the overall condition of marine habitats to be good. In the same vein, almost half of the respondents (44%) believed that there was only a fair level of protection afforded to marine mammals in the whole of the Philippines, and only 22% perceived that it was at a good level; 20% replied that they were 'unaware' of the overall condition of marine habitats in the country (Figure 3).

In terms of their cetacean watching experience, many of the CWTs believed that the current level of dolphin-watching tours was good (58%) to fair (41%) (Figure 3). Also, almost all of the respondents (96%) were willing to do cetacean watching again in the near future (Figure 4). Nonetheless, the tourists believed that the tours could still be improved. A list of the major components of cetacean watching that the respondents enjoyed most and those that needed improvement is shown in Table 3. The most cited enjoyable component was seeing the wild dolphins or toothed whales (28%), followed by swimming and sunbathing in the 'Sandbar' (21%),

Table 2. Percentage distribution of cetacean watcher-respondents according to selected demographic variables, number of times they have gone cetacean watching, and sources of information about cetacean watching*

Marital Status		Income (x 1000 PhP)		Home Province		Number of times Rs have gone cetacean watching		Source of information on cetacean watching	
Single	39 (37)	<50	11 (10)	Negros Oriental	39 (37)	1x	75 (71)	Friends/ Relatives	50 (60)
Married	52 (49)	51-100	2 (2)	Negros Occidental	11 (10)	2x	13 (12)	Newspapers/ Magazines	19 (22)
Divorced	5 (5)	101-150	15 (14)	Cebu	16 (15)	3-4x	5 (5)	TV & Radio Ads	16 (19)
Widow	2 (2)	151-200	7 (7)	National Capital Region (NCR)	8 (8)	>4x	7 (7)	Internet	2 (3)
Other	2 (2)	201-250	4 (4)	Overseas	16 (15)			Other	13 (15)
		251-300	4 (4)	Other	9 (9)				
		301-350	4 (4)	No answer	1 (1)				
		351-400	4 (4)						
		401-500	4 (4)						
		>500	31 (29)						
		No answer	14 (13)						

* Note: Figures in parentheses represent raw frequencies

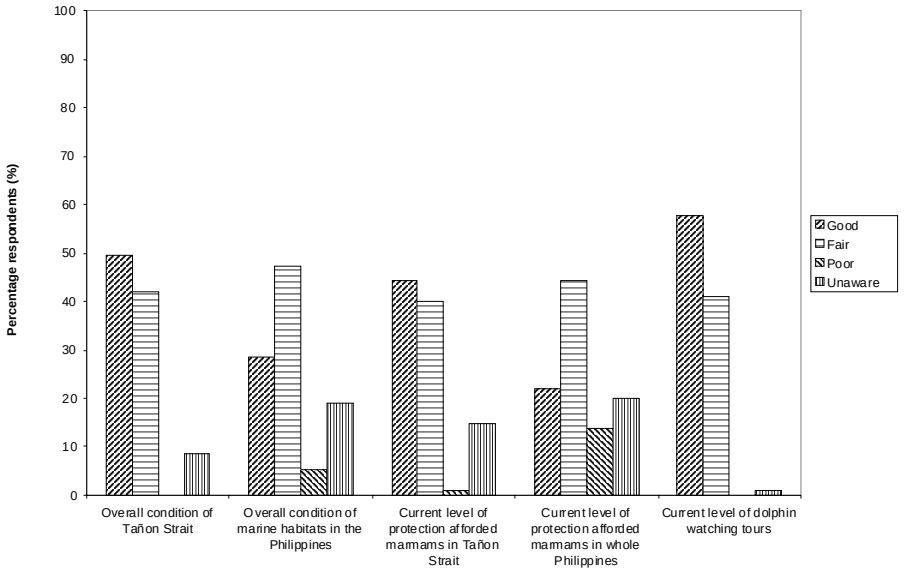

Figure 3. Perception of cetacean watching tourists interviewed from May 11 to August 19, 2004 in the Capiñahan Wharf, Bais City, Negros Oriental, Philippines (n=95) regarding some relevant issues on marine mammals (marmams), marine ecosystem and dolphin watching.

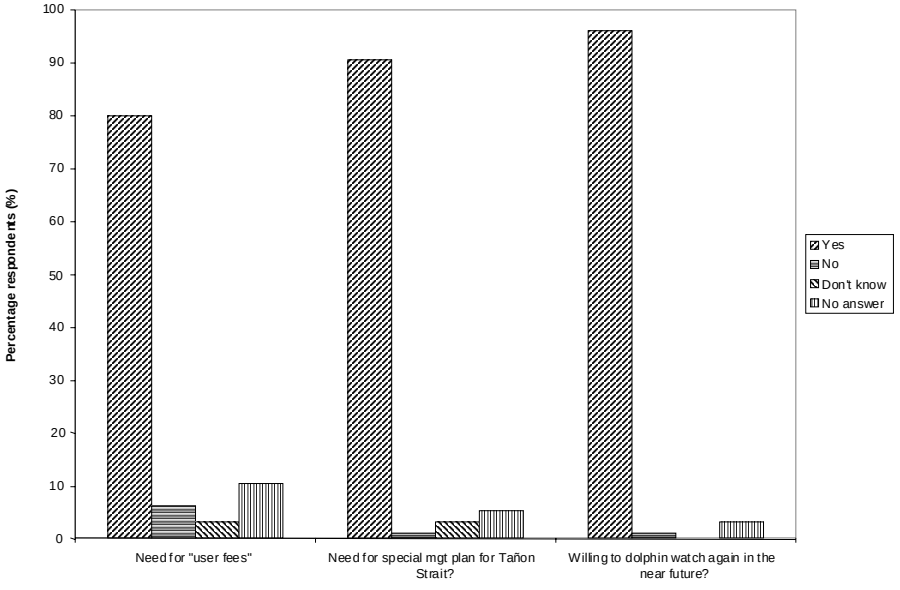

Figure 4. The need for user fees, special management plan for Tañon Strait and the willingness to cetacean watch again in the near future according to cetacean watching tourists interviewed from May 11 to August 19, 2004 (n=95).

Table 3. List of the components of cetacean watching tours that the cetacean watchers enjoyed the most and those that they recommended for improvement

Component most enjoyed	n	%	Component most needing improvement	n	%
Seeing wild whales/dolphins	55	28	Shower rooms & toilets	40	29
Swim/snorkelling and sunbathing at 'Sandbar'	41	21	Coordination with regards to booking of boats	10	7
Seeing nature itself (apart from dolphin)	36	18	More information regarding dolphins, whales, marine habitats and marine conservation in general	10	7
Courteous service by staff	17	8	Protection of dolphins	7	6
Fun and great experience	18	9	Snorkelling gear (rental?)	6	4
Safety first and well maintained boats	10	5	Boats (e.g. more space)	4	3
Other	8	4	Other	10	7
No answer	15	7	No answer	51	37
TOTAL = 200			TOTAL = 138		

and enjoying nature (18%). The provision of shower rooms and/or toilets on the wharf for CWTs' use was the most cited component (29%) that could improve this ecotourism activity. However, 37% of the cetacean watchers interviewed did not provide information about their cetacean watching experience.

Almost all of the CWTs (91%) believed that there was a need to develop a 'Special Management Plan' (SMP) for TSPS, whose primary purpose would be to protect the local cetaceans and their habitats (Figure 4). Eighty percent (80%) were willing to pay additional money or user fees for the protection and conservation of marine mammals in the area (Figure 4). The respondents believed that the user fees should be managed or administered either by the Local Government Unit (50%) or a special unit (40%). The amount visitors were willing to pay for user fees varied significantly (t = 4.398, df = 5, p = 0.007) ranging from <10 PhP (~0.20 USD) (31%) to >50 PhP (~1 USD) (25%).

Knowledge of Local Fishers and Non-fishers about Marine Mammals and Cetacean Watching

Only 50% of the fishers interviewed in Bais City were familiar with marine mammals, i.e. able to describe these animals, in comparison to those in Cebu where all of the interviewees (100%) showed good knowledge of marine mammals (Figure 5). Similarly, the NFs in Cebu were more familiar with marine mammals (~80%) than their counterparts in Bais City (~50%) (Figure 5). In Bais City, a majority (~60%)

of fishers familiar with marine mammals claimed that the summer season is the best time to see cetaceans (Figure 6). Almost half of the fishers from Cebu believed they could sight cetaceans year-round (Figure 6). However, 38% of these fishers also suggested that summer is the best time to go cetacean watching. It should be noted that the entire Negros island is more of an agricultural area as evidenced by its extensive sugarcane farms while Cebu is famous for its fishing industry as manifested in its extensive seafood products.

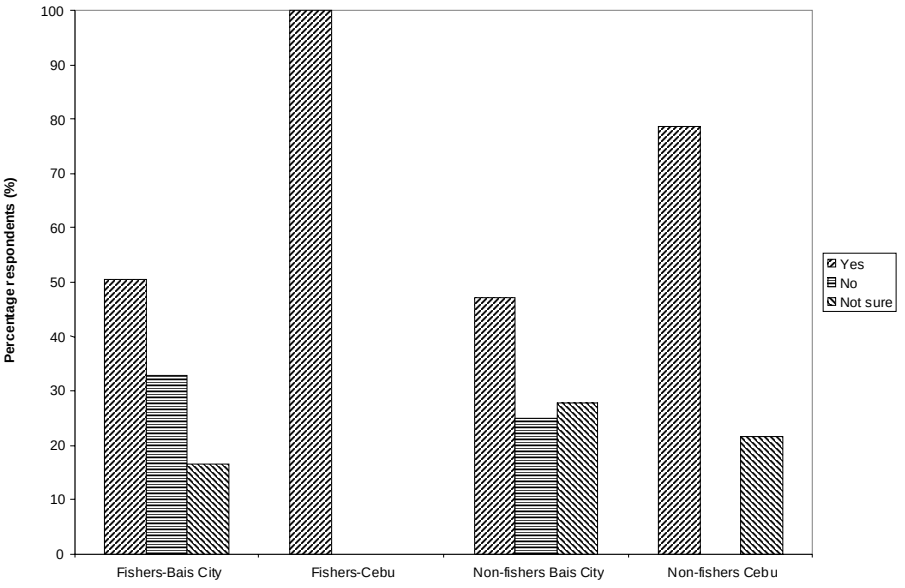

Figure 5.Familiarity with marine mammals of local fishers (Bais City, n= 79; Cebu, n=21) and non-fishers (Bais City, n=36; Cebu, n=28).

Around seven out of 10 fishers from both Bais City (68%) and Cebu (72%) perceived that the relative abundance of cetaceans in their area has been increasing in the last five years (Figure 7). On the other hand, a considerable proportion of the NFs in both areas believed that there have been no changes in the cetaceans' relative abundance (Figure 7). Only 28% of the fishers in Bais City claimed some form of fishery-cetacean interactions (e.g. dolphins eating fish caught by fishers) in comparison to 57% from Cebu (Figure 8). The fishers who acknowledged fishery-cetacean interactions (i.e. dolphins either eating their catch or dolphins being caught in their gear) were mainly gill netters, and hook and liners. The fishers interviewed in Bais City employed a variety of fishing gears, with the biggest numbers using

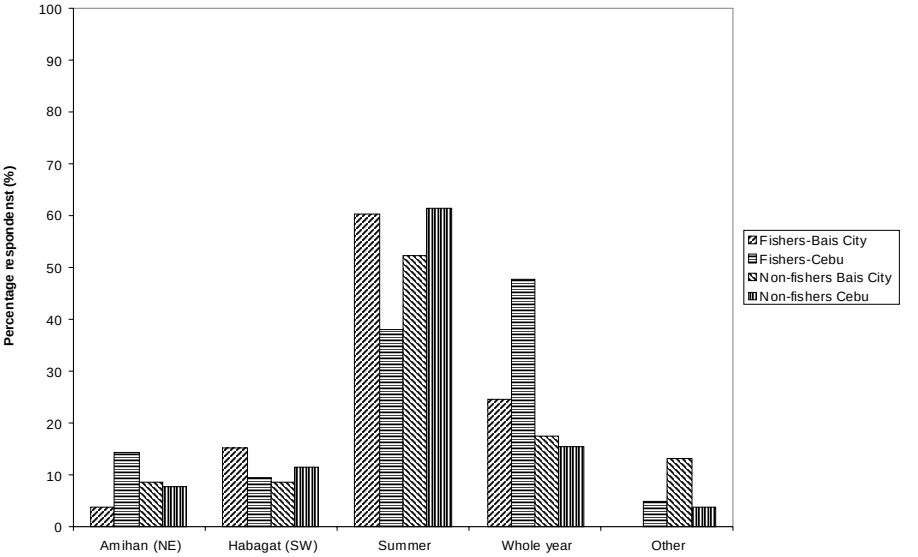

Figure 6. Season when cetaceans were most frequently sighted by fishers (Bais City, n=53; Cebu, n=21) and non fishers (Bais City, n=17; Cebu n=22). See text for complete explanation.

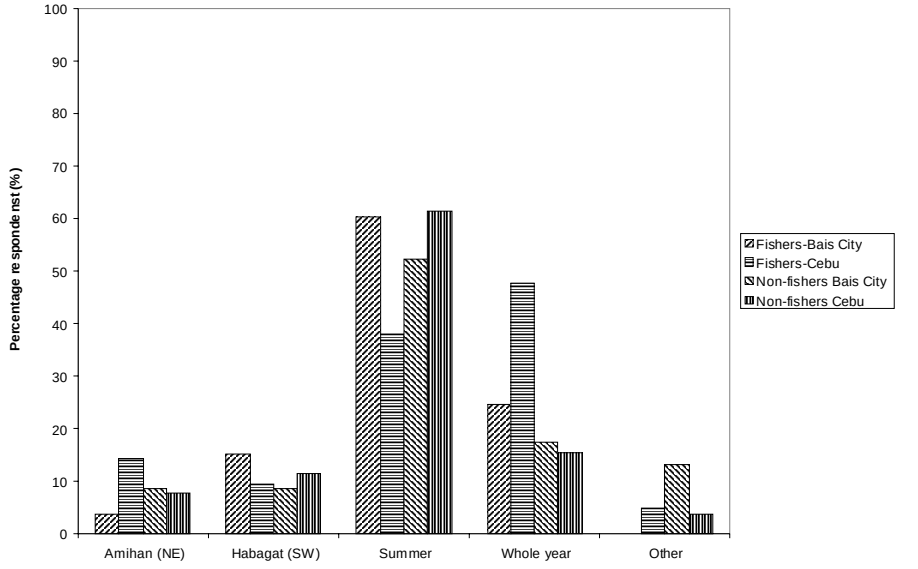

Figure 7. Perception of local fishers (Bais City, n=53; Cebu, n=21) and non-fishers (Bais City, n=17; Cebu, n=22) regarding the trend in relative abundance of cetaceans in the area.

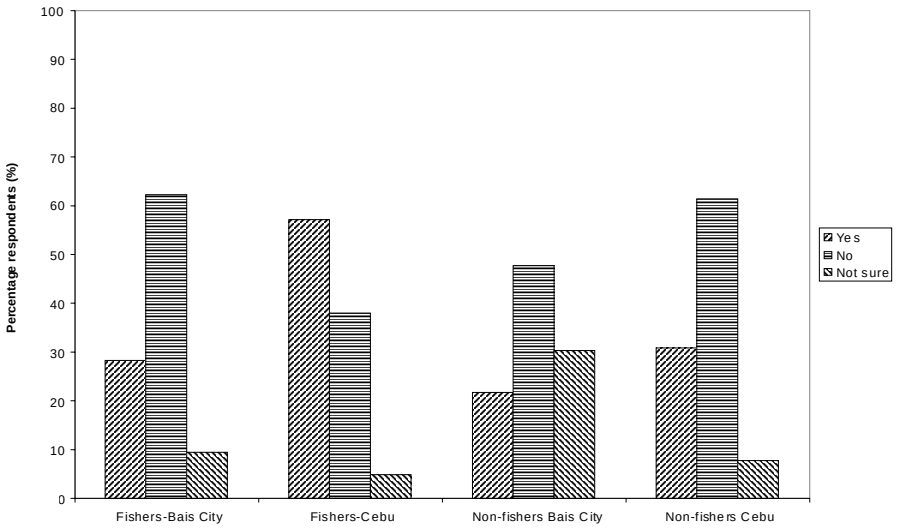

Fig. 8. Perception of local fishers (Bais City, n=53; Cebu, n=21) and non-fishers (Bais City, n=17; Cebu, n=22) regarding cetacean-fishery interactions in the area.

gill nets (39%) and beach/boat seine (22%) (Table 4). The fishers in Cebu employed mostly gill nets (41%) and hook and line (45%). Interestingly, all fishers and NFs interviewed agreed that marine mammals should be protected and conserved.

Dolphin Watching Boats in Southern Tañon Strait – Types and Costs

The boats used for dolphin watching are basically modified (i.e., with elevated floor to allow better viewing) pumpboats or canoes (locals call them 'motorized banca') with outriggers. Initially, there were two big (~30 ft long) boats (MBa Dolphin I and Dolly): each could accommodate as many as 20 people (plus crew) and charged 3,000 PhP (~58 USD) per trip. Later, the smaller (~20 ft long) boat MBa Dolphin II was added; it could accommodate as many as 15 people, and charged 2,500 PhP (~48 USD) per trip. These prices are not cheap by Philippine standards (1 USD = 52 PhP in 2004). However, this price has remained nominally the same as when dolphin watching started in 1995. The most recent price increase occurred only during the summer of 2009. The big boats now charge 4,000 PhP (~80 USD at 1 USD =47 in 2009) per trip, while the smaller boats charge 3,500 PhP (~70 USD).

Cetacean Watching Tourist Arrivals and Boat Trips from 2007 to 2012

During the period 2007 to 2012, the number of cetacean watching tourists peaked in 2007 and 2010, as shown in Figure 8. In 2007, there were a total of 7,497 tourists; of these, 86% were local tourists and only 14% were foreigners. On its

Table 4. Percentage of fishers from Bais City and Cebu who reported cetacean-fishery interactions, by type of fishing gear used*

	Bais City		Cebu	
Fishing Gear	% of total (n=98)	% acknowledged cetacean-fishery interactions (n=15)	% of total (n=29)	% acknowledged cetacean-fishery interactions (n=12)
Purse seine	14 (14)	13 (2)		
Gill net	39 (38)	40 (6)	41 (12)	34 (4)
Driftnet	1 (1)	7 (1)	7 (2)	
Spear fishing	7 (7)		7 (2)	8 (1)
Cage/fish trap	3 (3)	13 (2)		
Fish corral	3 (3)			
Beach/boat seine	22 (21)			
Hook and line	11 (11)	27 (4)	45 (13)	58 (7)

*Note: (1) Figures in parentheses represent raw frequencies; (2) Multiple response: Some fishers used more than one type of fishing gear

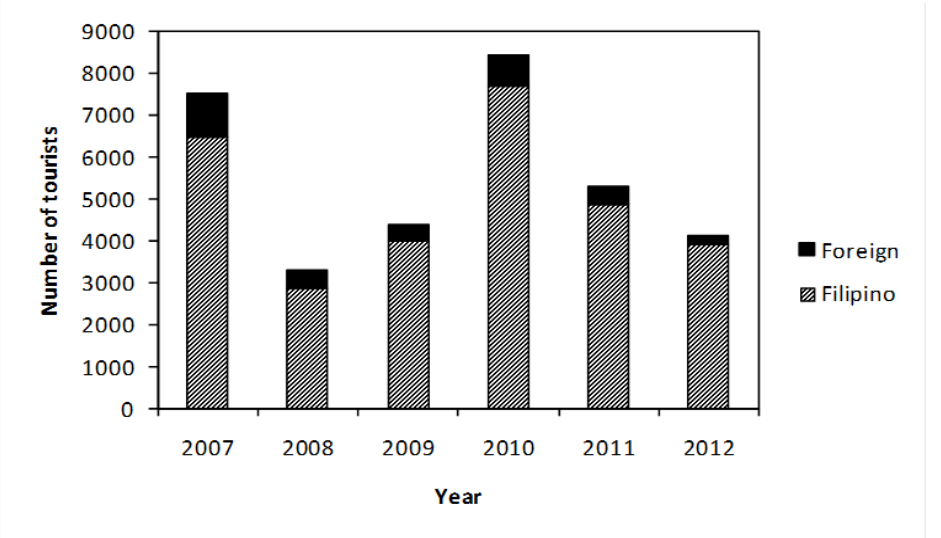

Figure 9. Cetacean watching tourists' arrivals in Bais City from 2007 to 2012.

second peak in 2010, the number of tourists totaled 8,415. After these peak years, however, tourists arrivals decreased by 56% and 37% in 2008 and 2011, respectively. Tourist turn-out in 2008 was the lowest during the period 2007 to 2012, with 3,293 visitors registered (Figure 9). In each year, on the average, 90% of the visitors were locals while 10% were foreigners.

Not surprisingly, the number of boat trips per year during the period 2007 to 2012 showed similar trends as those for tourist arrivals (see Figures 9 & 10). Boat trips were most frequent in 2007 and 2010, with 613 and 742 trips, respectively. The number of boat trips declined by 61% from 2007 to 2008 and by 42% from 2010 to 2011. The lowest frequency of yearly boat trips for cetacean watching was in 2008, which also registered the lowest number of tourists. However, the number of cetacean watching boats operating increased from nine in 2007 to 14 in 2010 despite the relatively low tourist turnout and boat trips in 2008 (Figure 10).

In terms of the monthly boat trip data, boat trips were frequent during the months of March to July and peaked during the summer months of April and May, as shown in Figure 11. In the latter part of the year, boat trips increased during the months of September and October during the inter-monsoon season.

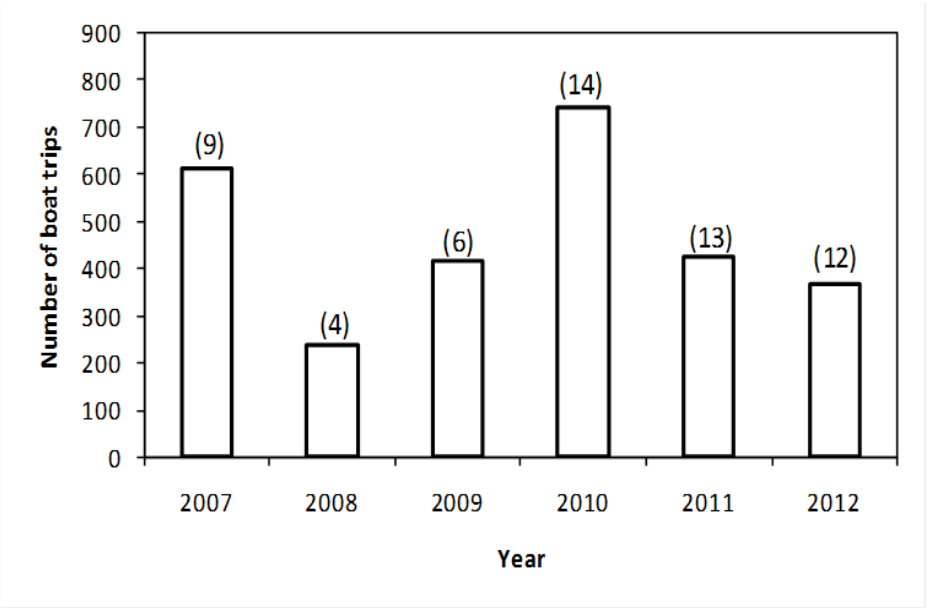

Figure 10. Cetacean watching boat trips from 2007 to 2012 (Note: Figures in parentheses represent the number of boats operating per year)

Initiatives on Environmental Awareness and Participatory Management

The main stakeholders that the study identified for the initiatives on environmental awareness and participatory management included individuals involved in cetacean watching operations (boat owners, boat captains, crew, tour guides and local officials from Bais City and Manjuyod), local fishers (fishing within the area) and local government officials. The workshops, meant to serve as a forum to discuss regulation of cetacean watching and protection of cetaceans, were all held upon the request of local stakeholder groups. These workshops eventually led to the formation (in October 2005) of the Tañon Strait Association for Dolphin and Whale Watching Incorporated (TaSADoWWI).

A total of 38 members signed up to become the charter members for TaSADoWWI. They were mainly dolphin-watching tour boat operators and employees (both from Negros and Cebu), employees of Bais City government (e.g., Bais City Tourism Office and Mayor's Office), and other concerned locals. Affiliate organizations such as the Bais City Government (City Tourism Office), University of the Philippines, University of Miami, and Nova Southeastern University were also acknowledged as institutional members since personnel of these organizations were involved in the formation of TaSADoWWI or are active members. Thus, the TaSADoWWI is composed

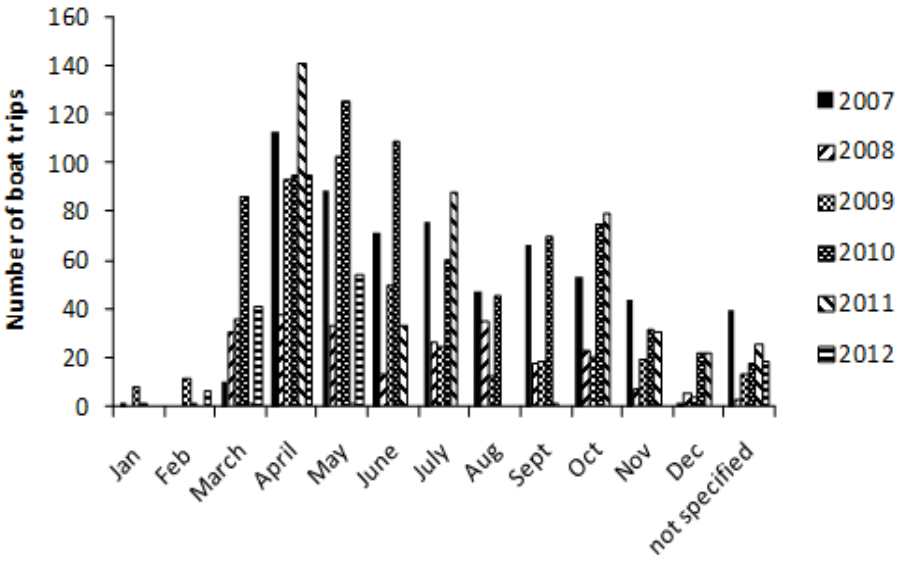

Figure11. Monthly cetacean watching boat trips from 2007 to 2012

of local and non-local stakeholders who share similar interests in cetacean watching, with a common goal to protect cetaceans and to develop and promote sustainable ecotourism in Tañon Strait.

DISCUSSION

This study showed that information from monitoring the cetacean watching ecotourism and key stakeholders (CWTs, fishers and NFs) in TSPS through interview surveys and FGDs, even if just preliminary, are critical in facilitating participatory management and building consensus about cetacean conservation and habitat protection. The survey results were used as the bases for consequent activities including workshops, which resulted in this case to the establishment of the TaSADoWWI and development of cetacean watching protocols. Building consensus is often challenging and our experience in Negros and Cebu gave us first-hand experience about this. Fortunately, using scientific methods (e.g. interviews and monitoring) guided us in the facilitation of a participatory process towards consensus building.

From the interviews, a preliminary picture of the perceptions of CWTs and the level of local knowledge of fishers and NFs, who are the key stakeholders in the TSPS, has emerged.

In general, younger people (< 30 years old) from Negros Oriental and those whose annual income was >500,000 PhP (~10,000 $US) were the primary clients of dolphin watching in the southern Tañon Strait. It should be noted that the average per capita income in the Philippines in 2006 was only 1,175 USD (ADB, 2007), thus majority of those who availed of cetacean watching were above average income earners. Further, it is not surprising to know that the bulk of non-local clients were from the nearby provinces of Cebu (16%) and Negros Occidental (11%). These two provinces plus the home province of Negros Oriental comprised 66% of the client base of the cetacean watching industry. Most tourists from adjacent provinces had to travel for at least four hours to get to Bais City. Those from Cebu have to cross the Strait via ferry and then travel by land either from the ports in Dumaguete or Tampi (San Jose), while those from Negros Occidental traveled solely by land (Figure 1). Furthermore, Bais City is not easily accessible to those from Metro Manila as they have to fly to Dumaguete City and then travel farther north to get to Bais City. The annual average percentage (10%) of foreign tourists recorded by the study, although small, was surprising considering the minimal advertising campaigns on cetacean watching locally and nationally (Table 2), and expectedly much less internationally. However, since its inception in 1995, dolphin watching in Bais City has been featured occasionally in various national TV programs in the Philippines .

As for the local fishers interviewed, they were predominantly male, belonging to a wide range of age brackets, had some secondary education, mostly experienced (>20 yrs) fishers, and knowledgeable of cetaceans (Table 1 & Figure 2). Meanwhile, the NFs interviewed represented both gender groups, had tertiary-level education, held various white-collared occupations, have been residents of their respective localities for a considerable time (>20 yrs), and had some awareness of local cetaceans. The major differences in the perceptions of fishers and NFs regarding cetaceans (e.g. fishers believed that cetaceans are increasing in the area while NFs perceived otherwise) may be explained by the disparity in their experiences with local marine resources. However, Aragones and others (unpublished) show that the population has actually been slightly declining since 2007. That the fishers and NFs agree on the need to conserve and protect these cetaceans is interesting, and may be attributed to the growing cetacean watching industry in the area and the threats this may pose to their fishing grounds (further discussed below).

Cetacean Watching in Southern Tañon Strait

Dolphin/whale watching in southern Tañon Strait is conducted in a straightforward manner and appears to be quite fulfilling for its participants. It appears to be still in its infancy stage, as the local boat design is still used as opposed to modern boats (without outriggers). It is also evident that cetacean watching has yet to reach a stable and sustainable stage, based on the fluctuating number of tourist arrivals and boat trips from 2007 to 2012. It is interesting to note that the mandated discounts for locals (Bais City residents) have made a difference in allowing the lower income residents to also go cetacean watching. In our study, all respondents who belonged to the lowest income bracket came from Bais City). The Bais City boats (MBa Dolphins I and II) were the most preferred boats by the CWTs. In fact, the smaller MBa Dolphin II boat was the most popular choice of the tourist-respondents.

Cetacean watching is definitely becoming a major economic activity not only for Bais City, but for the whole region. In 2006, dolphin watching in Bais City generated a gross income of ~1.5 million PhP (A. Serrano Jr., Bais City Tourism Officer, personal communication). In contrast, in 1999-2000, Bais City's whale watching gross earnings was only ~0.50 million PhP (Abrenica and Calumpong 2002). It is therefore not surprising that the adjacent localities are trying to emulate the Bais City model for cetacean watching.

In anticipation of the proliferation of cetacean watching, the local government has been cautioned that there should be studies examining the impacts of dolphin watching boats on dolphins, and setting maximum limits on the number of tourists and boat trips that could be permitted on a daily basis so that these do not interfere

with cetacean habits (i.e., carrying capacity studies) before any additional licenses for dolphin watching boat operators are issued. In April 2005, another tour boat (MBa Alfer) was licensed to operate in Bais City, making it the fourth boat that holds a license for offering cetacean watching tours in the area. This is the second boat of the owners operating MBa Dolly. According to Bais City Tourism records (2005) the number of tourists increased by 12% from 2003 to 2004. This trend, along with the current lack of regulation of dolphin watching boats, has resulted in an alarming increase in the number of dolphin watching boats in southern Tañon Strait. As of 2009, another 10 to 12 boats were operating in Bais City through another port – Cannibol (Northern Bais Bay, see Figure 1 inset). In the adjacent island of Cebu (from Liloan, Malabujoc to Badian, Figure 1), a total of five to 10 boats are operating seasonally – that is, during the summer season, the peak period for cetacean watching in the area. In 2009, several adjacent municipalities namely Ginatilan, Alegria, and Aloguinsan, all from the Cebu side, have shown interest in offering cetacean watching tours. This increase in the number of operators may lead to a decline in the quality of the cetacean watching experience of the tourists. As such, the growing interest in, and popularity of, cetacean watching warrants the need for more studies and monitoring of the area.

The Tourists' Impressive Experience in Southern Tañon Strait

Another finding of our study that merits highlighting is the tourists' perception that the quality of cetacean watching package offered by the three legally permitted and appropriately trained tour boats embarking from Bais City ranged from good (58%) to fair (41%). This appreciation or show of approval was evident in the willingness of CWTs to cetacean watch again (Figure 4) as quite a few have already done (see Table 2). What appears to be most appealing to the tourists is the opportunity to watch the marine mammals in an almost pristine environment. It is also a memorable experience to watch large groups of dolphins ranging from 100 to 300 individuals. Further, it is almost rare to see a large area (~150 h) of almost white sand, still undeveloped. This place is popularly referred to as 'Sandbar' or 'White Sand' (Figure 1) and is found between Bais City and Manjuyod. This area is most likely the savior of the dolphins from tourists. Instead of overstaying with the dolphins, the tourists go sunbathing, swimming, and taking their lunch in this area.

Implications of Results for the Management Process for Protecting Cetaceans

There is consensus among conservationists that protecting areas and habitats critical to the life cycle of organisms is fundamental to sound species management (e.g., Shipley 2004). However, setting up a marine protected area for cetaceans is often

problematic because of their extensive migration routes that greatly exceed what most resource managers would be willing to allocate, much less manage as an MPA (Hoyt 2005). This is one of the challenges in the TSPS area and the reason why we believe it is imperative to develop a participatory management plan for this body of water so as to not only protect the ecological integrity of the system but also sustain the local sustenance fisheries and cetacean watching in the long term. Unfortunately, with the increasing number of boats, the logistics required to ensure maximum compliance with dolphin watching protocols would become increasingly limited.

The interviews revealed that among the CWTs, there was a clear consensus that the local cetaceans should be protected. This is an overwhelming show of support for conservation of these animals and their habitat. This was the opposite of the usual response that the local fishers and NFs gave during the workshop discussions, who believed that cetaceans are pests to fishing. This is obviously a misperception as Dolar (1999) has established that the most dominant cetacean species in the area, spinner dolphins, predominantly eat small mesopelagic fishes and squids, which fishing gears can neither reach nor target. Despite their misperceptions, however, the fishers and NFs from both Cebu and Bais were unanimous on the need to protect and conserve cetaceans. As for the CWTs, they perceived a need to develop a Special Management Plan (SMP) for TSPS. As mentioned, a series of seminars and workshops on the ecology and conservation of cetaceans in TSPS and on the proposed protocols or guidelines for cetacean watching were conducted. These seminar-workshops were borne out of the overwhelming requests from the locals, and were instrumental in organizing the cetacean watching operators, including selected local resort owners, to form the TaSADoWWI. The main mission of the TaSADoWWI is to provide and promote ecologically-friendly dolphin watching services, and to elevate the standards of this ecotourism activity. The consensus built by the locals through these seminars, workshops and organization (TaSADoWWI) are manifestations of the participatory management process. In contrast, the Protected Area Management Board (PAMB) for the Tañon Strait Protected Seascape, which has been mandated to manage the Strait (as per Philippine Republic Act 7586, the National Integrated Protected Areas System Act of 1992) by developing a Management Plan (MP) involving its stakeholders, is perceived to have failed its mandate. The organization is perceived to be composed of dubious members, and is alleged to be non-transparent because it issues prescriptive memoranda without appropriate consultation with the concerned stakeholders. The respondent CWTs were willing to pay additional money for user fees, on top of the tour fees, in order to augment the funding for the development and implementation of the SMP for the TSPS. However, the amount they are willing to pay as user fees was too small (<10 PhP)

(~0.20 USD). The body they identified to be most appropriate for administering the funds is either the local government unit or a special agency that will be established by and through the SMP.

Recommendations for Improving the Cetacean Watching Experience

As stated above, the CWTs were generally very pleased with their cetacean watching experience. However, there are still areas for improvement to make the cetacean watching tours even more memorable and satisfying for CWTs. As the respondent-CWTs have articulated, there should be shower rooms that tourists could use after swimming in the waters near the Sandbar. Steps should be taken to make the tour booking process more efficient and the content of the tours more informative/educational. Both of these concerns are already being addressed by the cetacean watching ecotourism industry stakeholders. For instance, a workshop for tour guides was conducted in the summer of 2006, to provide the guides with information about the basic biology and ecology of the cetaceans found in the area and other related facts about the city of Bais, the province of Negros Oriental, and Tañon Strait. In addition, the newly formed TaSADoWWI will spearhead the implementation of a centralized process for booking reservations, which is expected to minimize conflicting trip schedules. The current tour service is definitely very simple and very much wanting (Table 3) in comparison to those offered in developed countries. However, these shortcomings are easily outweighed by the near-pristine condition of the environment and the memorable experience of being in close proximity to wild dolphins and sometimes toothed whales (Table 3), the major draw for repeat watchers (Table 2).

The Need to Protect and Manage the Tañon Strait Protected Seascape

Tañon Strait is considered as one of the most productive waters in the Visayan Region (Yambao and others 2001; Green and others 2003, 2004). It is one of the most unique aquatic systems in the country as 14 of the 28 cetaceans recorded in the Philippines have been sighted in the area through the years (Aragones and others 2003; Aragones and Keith 2004; Aragones 2008; Aragones and others unpublished data). The area also features many natural assets such as coral reefs (e.g., Piscador Island, Moalboal, and Mantalip Reef, a single barrier reef) and mangrove forests (300 hectares, Talabong Mangrove Reserve in Bais City, Yambao and others 2001). The marine ecosystem of the whole Philippines is primarily threatened by overexploitation, pollution and coastal development (Gomez and others 1981; White and Cruz-Trinidad 1998; Alcala 2001; Christie and others 2003).

This study has shown that in general the CWTs believed that the overall condition of Tañon Strait is better than that of the marine ecosystem for the whole Philippines (Figure 3). However, some data show that there was a significant decline in the population of spinner dolphins in the southern Tañon Strait area in 2005-2006, most likely due to activities related to the oil exploration in 2004 (Aragones and others unpublished data). As noted above, the spinner dolphin is the main species that is watched in this area (see Appendix D).

Under the current set up provided in the Philippine Wildlife Conservation and Protection Act of 2001 (Philippine Republic Act 9147), the protection of marine mammals is a responsibility shared between the Bureau of Fisheries and Aquatic Resources (BFAR) and the Protected Areas and Wildlife Bureau (PAWB). The BFAR, which is under the Department of Agriculture, takes care of cetaceans; the PAWB, which is under the Department of Environment and Natural Resources, handles the dugong. As provided for in RA 9147, the fines and penalties for killing, maltreating, harming, and illegal trading of wildlife, including marine mammals, will range from from 50,000 to 1M PhP. However, monitoring of the implementation of the Act has been weak. For instance, neither the Negros Oriental nor the Cebu portions of Tañon Strait area are regularly patrolled. Most patrolling is limited to the respective municipal territorial waters (ranges from 3 to 14 km from shoreline in Tañon Strait). Further, there has been a considerable incidence of strandings of cetaceans in this area: specifically, 7 stranding incidences in 6 years; 4 of the 7 incidences involved spinner dolphins (Aragones and others 2010). Furthermore, with the significant increase in the number of dolphin watching boats and the absence of clear policies and regulatory measures for cetacean watching tour operators, we predict that the quality of dolphin watching tours will decline. For one, an increase in the number of visitors is bound to cause some damage to the currently still pristine environment of the TSPS. Moreover, with more boats, competition among operators will increase, and they would likely try to outdo one another, which in turn would lead to the harassment of dolphins (i.e., analogous to Malthusian fisheries). A recent study by Roque (2011), which examined the impacts of cetacean watching boats on the behavior of spinner dolphins in the southern Tañon Strait area, showed significant negative effects of the former on the latter.

Simultaneous with the aims of developing an appropriate management plan for the cetacean watching ecotourism industry and of making this industry sustainable, one should bear in mind that other activities in the area such as fisheries and other forms of livelihood and ecotourism should be harmonized. All of these economic activities should be carried out at a sustainable level. To ensure this, participatory management process should be facilitated, involving local fishers, residents, tourists

and investors, to guarantee equitable resource use (after Thiele and others 2005). In general, it is perceived that tourism is beneficial to local and developing communities. However, Thiele and others (2005), in their assessment of the Integrated Coastal Management sustainability in the Central Visayas, found that it is not entirely true. Their analysis revealed that there was an inverse relationship with the quality of life and the presence of tourism, and that there seemed to be a higher level of community tension between local fishers and proponents of tourism. As noted earlier, the southern TSPS area is a fishing ground with very high fishing efforts (Green and others 2003). In addition, an increasing number of illegal fishing has also been recorded in the TSPS (Green and others 2004). It is our hope that the tourists' impressive cetacean watching experience in the TSPS would be maintained, alongside the development of other similar sustainable ecotourism activities in this area so that the ecological integrity of the entire TSPS would be valued and be sustained by the locals themselves.

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Appendix A. Recommendations for the protection and conservation of the cetaceans and their habitats in the Tañon Strait Protected Seascape (TSPS)

Based on the results of this study, the following are our recommendations:

- The PAMB for TSPS should reorganize and invite to the discussion table the real concerned stakeholders (e.g., Mayors from Negros and Cebu bordering Tañon Strait, TaSADoWWI, associations of resort owners and fisherfolk organizations, local NGOs, researchers working in the area).
- All concerned stakeholders (as mentioned above) should map out through a participatory management process where the key activities (e.g., eco-tourism, fishing) are conducted and where important habitats are found (e.g., cetacean habitats, coral reef and mangrove reserves) and establish multiple use zones and core critical areas in the TSPS.
- All concerned local government units (LGUs) (e.g., Bais City, Manjuyod, Bindoy) should plan and develop facilities (e.g., road access, ports, souvenir shops, comfort rooms, etc.) within the focal areas to ensure the quality and safety of dolphin watching tours, as well as improve and broaden entrepreneurial opportunities among the other sectors of the communities (e.g., fishers, resort owners).
- All concerned LGUs (e.g. Bais City, Manjuyod) should continue the training and certification of dolphin boat operators from boat captains to tour guides (e.g., cetacean watching protocols) and even make this mandatory to ensure the professionalization of the cetacean watching industry. These LGUs should continue the environmental awareness through seminars and workshops (e.g., integrated coastal management, fisheries and marine mammal interactions).
- All concerned LGUs who operate dolphin watching boats (e.g. Bais City, Manjuyod, Malabujoc) with the assistance of the TSPS PAMB should develop, institutionalize and implement appropriate regulations for the

boat operators (e.g., minimum boat sizes, boat captain license, life craft and fishing gear license) through participatory management process. Some of these trainings and patrolling could be funded by 'conservation fees'.

- The local and national governments should never allow a foreign company to conduct seismic surveys (2004) and exploratory drilling (2007) in this Protected Area without an appropriate Environmental Impact Assessment (EIA) and proper consultations with key stakeholders.

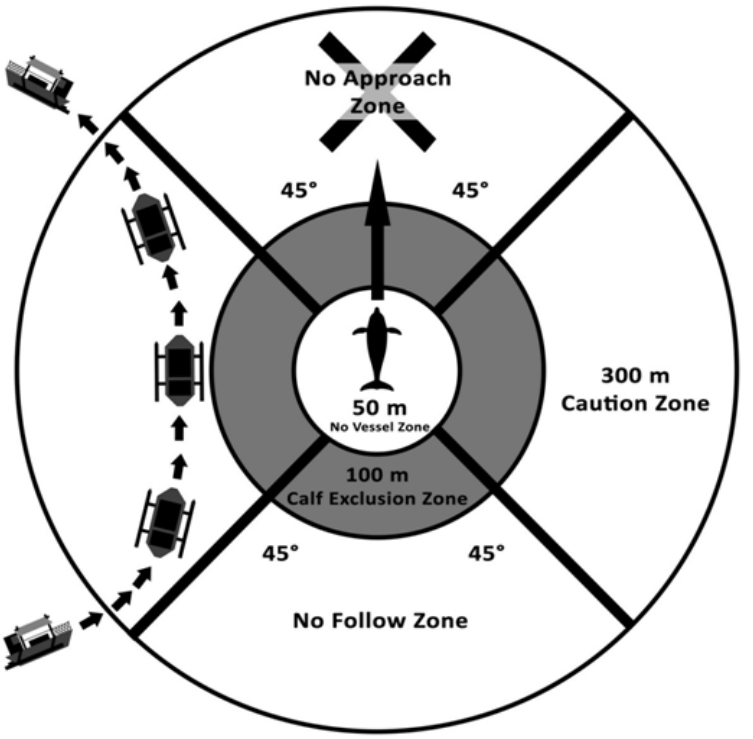
Appendix B. Cetacean watching protocols in southern Tañon Strait

1. Slow down when approaching cetaceans (dolphins and whales)
2. Approach cetaceans or group of cetaceans from sides and never from front nor behind the group (see also Appendix C).
3. The allowed number of boats per group size of dolphins are the following:
    A. If group is < 10 animals, ONLY 1 boat
    B. If group is ~11-50 animals, max. 2 boats
    C. If group is > 50 animals, max. 3 boats
    D. When several boats are sharing groups, NEVER crowd the dolphins
4. Active approaches by boats (whether motorized or not) should follow minimum distance and should stop ("low gear"; do not idle engine) and wait when they reach such distance or zones.
5. Give the dolphins and whales the choice to interact. If a group of animals chooses to interact, it will approach and often remain with the boat and maybe "bow ride".
6. Do not harass the dolphins and whales by chasing them or driving through their herd. If you are actively motoring to stay with the animals at a certain distance, this means that the animals are moving away and are choosing not to interact.
7. When leaving the group, make sure that there is enough distance (> 200 m) before speeding up or revving up the engine.
8. When watching dolphins and whales, adopt the following zones (see Appendix C for an illustration of these zones):
    A. Caution Zone – the designated or predetermined distance and area designed to reduce possible adverse effects on animals while allowing reasonable viewing:
        i. 300 meters for whales
        ii. 150 meters for dolphins

B. No Vessel Zone – 50 meters from the animals (measured from outer section of herds)
C. Calf Exclusion Zone – 100 meters away
D. No Approach Zone – within 45 degrees of the animals' direction
E. No follow zone – within 45 degrees of the animals' tail section

9. Do not feed the dolphins and whales.
10. Do not touch these animals.
11. Do not swim with these animals.
12. Hire only accredited dolphin and whale watching boats.
13. All commercial dolphin and whale watching boats should employ trained boat captain, crew and tour guides.

Appendix C. Diagram of the Cetacean Watching Protocol



Appendix D. List of cetacean species recorded in Tañon Strait from 1994 to 2012; all data from Aragones and others (unpublished data) except 1994 and 2003 (see reference below)

	Species	Common Name	1994[1]	1997	1998	1999	2000	2001	2003[2]	2004	2005	2006	2007	2008	2009	2010	2011	2012
1	*Stenellalongirostris*	Long-snouted spinner dolphin	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
2	*Stenellaattenuata*	Pantropical spotted dolphin	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
3	*Tursiopstruncatus*	Common bottlenose dolphin	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
4	*Tursiopsaduncus*	Indo-Pacific bottlenose dolphin								√	√	√	√	√	√	√		
5	*Grampus griseus*	Risso's dolphin		√	√	√	√		√		√		√	√	√		√	√
6	*Lagenodelphishosei*	Fraser's dolphin		√	√													√
7	*Kogiasima*	Dwarf sperm whale	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
8	*Globicephalamacrorhynchus*	Short-finned pilot whale	√	√	√	√	√	√	√		√	√				√		
9	*Pseudorcacrassidens*	False killer whale		√			√			√				√			√	
10	*Feresaattenuata*	Pygmy killer whale		√		√	√	√			√							
11	*Peponocephalaelectra*	Melon-headed whale	√	√	√	√	√	√	√		√	√	√	√				√
12	Unidentified Beaked whale	-	√															
13	*Physetermacrocephalus*	Giant sperm whale	from stranding															
14	*Balaenopteraomurai*	Omura's whale	from stranding											from stranding				
	Total per year		**7**	**10**	**8**	**8**	**9**	**7**	**7**	**6**	**9**	**7**	**7**	**8**	**6**	**6**	**6**	**7**

[1] – *from Dolar (1994)*
[2] – *from Bautista, A. and Buccat, M.; WWF-Philippines (2003)*

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