



# Minimizing the impact of (eco)tourism on marine life

Towards sustainable dugong (*Dugong dugon*, Lacépède) observation practices  
in Busuanga, Palawan, Philippines

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## Minimizing the impact of (eco)tourism on marine life.

Towards sustainable dugong (*Dugong dugon*, Lacépède) observation practices in Busuanga, Palawan, Philippines

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**Is this thesis confidential?** No

“Only if we understand, can we care.

Only if we care, we will help.

Only if we help, shall they be saved.”

– Jane Goodall, 1998

## ABSTRACT

Busuanga Island (Palawan, the Philippines) is one of the last hotspots for Dugongs (*Dugong dugon*, Lacépède). Tourists are becoming increasingly interested in swimming with this elusive creature, although the sustainability of these tourism activities remains largely unknown. Community Centred Conservation (C3 Philippines), a dugong conservation NGO, helped the local Calawit community with drafting a dugong watching protocol and establishing an independently owned Dugong Watching Enterprise to perform sustainable dugong watching trips in their ancestral domain.

To assess the sustainability, implementation of protocol and observe violations, eighteen dugong watching trips were accompanied in May and June 2018. During each trip three surveys were used: an observation survey, a Bantay Dugong (is a dugong ranger that accompanies the trips) survey to collect background data on the rangers and trip and a tourist survey covering personal profile data collection and determining their willingness to pay for the dugong viewing experience.

The research presented here shows that the dugong watching protocol is only partly followed by the various stakeholders. The most alarming violations of the protocol occurred during the in-water tourist-dugong interaction, resulting from an unexpected lack or incompleteness of guideline explanations by Bantay Dugong. The tourists showed a high willingness to pay for their dugong experience with averages ranging up to 16% above the normal fee, and especially when dugong conservation efforts were promised the increase was even higher (up to 25%). These results are comparable to other willingness to pay studies.

The violations in close proximity with the dugong can be avoided by increasing the self-confidence of the Bantay Dugong and, consequently, create more awareness about guidelines on the tourists' side. Further, it is concluded that the high willingness to pay prices offers opportunities to reduce visitor intensity and create a more exclusive image for dugong interaction, while an independent dugong conservation capital could be initiated that would simultaneously increase revenues for the Calawit community.

## EXECUTIVE SUMMARY

The research reported here was conducted for Community Centred Conservation (C3 Philippines), a dugong (*Dugong dugon*) conservation organisation active in Busuanga Island (Palawan, the Philippines). Dugongs are herbivorous mammals surviving solely on seagrass and are globally listed as vulnerable. Since 2017, tourists come to the ancestral waters surrounding Calawit Island (part of Busuanga) for dugong watching activities, i.e. swimming in close proximity with the dugong with scuba or snorkelling gear. C3 Philippines cooperates with the Calawit community for dugong conservation actions and advises the community on sustainable dugong watching practices but is deliberately not financially involved with the tourism activities. The quality of implementation of the approved dugong watching protocol remained unknown prior to the research presented here.

The unknown implementation raised the question how the sustainability of the dugong watching practiced could be improved, while simultaneously keeping it financially attractive for the Calawit community. To answer this, four sub questions were formulated: 'How is the protocol implemented?', 'How do dugongs behave during dugong interaction?', 'Can the quality of data collection be improved?' and 'What are tourists' willing to pay for a dugong experience?'

In eighteen accompanied trips, dugong watching practices were observed. When tourists arrive in Calawit, each visitor pays an entrance fee of PHP 300 (€5) and a community member working as a Bantay Dugong (dugong ranger) accompanies the tourist vessel to ensure sustainable tourist practices. The researcher conducted an observation survey during each trip and the Bantay Dugongs and tourists present were asked to participate and complete specifically designed surveys. The following results were obtained:

- The research showed that all tourist vessel actions were according to the dugong watching protocol. However, many violations (27) were observed during the tourist-dugong interaction. These violations were likely caused by a lack of or incomplete explanation of guidelines to the tourists as well as language barriers. Additionally, there is indistinctness on allowed length of dugong interaction time per group. C3 Philippines states an interaction time of fifteen minutes, the Bantay Dugong regularly state twenty minutes while tour operators occasionally allowed more than thirty minutes.
- The individual dugong involved in most watching activities seemed largely ignorant of tourists being in close proximity and changed behaviour only three times during all observations. Tourists' tended to enclose the dugong at the front, sides and above, resulting in a difficult passage to the surface and forced to nearly touch the tourists. After breaking free from the enclosure, the dugong surfaced and swam away in high speed.
- The data collected with the Dugong Watching Monitoring Form was analysed on ambiguity an unclearness. All issues causing ambiguous or unclear data gathering were solved in an improved version of the Dugong Watching Monitoring Form and handed over to C3 Philippines for implementation.
- The average price paid for a one-day dugong watching trip was PHP 6183 (€103). Tourists were willing to pay up to 16% more (PHP 7198 (€120)) for the same one-day dugong watching trip. When 10% of their expenses were reportedly going to be allocated to dugong conservation efforts, tourists' willingness to pay for the dugong experience increased with at least 7%. This meant an increase in price of 13-25% overall, resulting in a maximum average of PHP 7729 (€129).

The results identified focus points for improvement in sustainable practices and showed the financial plasticity for reduction in visitor intensity while increasing revenue for the Calawit community and

simultaneously start a dedicated, independently owned, dugong conservation fund. To reduce the number of violations and therefore the unsustainability of the dugong watching practices, the confidence and communication skills of all Bantay Dugong need improvement. Providing special and repetitive training(s) can achieve this. The willingness to pay results might implicate that at least half of the tourists would be willing to pay a raised entrance fee of PHP 1800 (€30), (PHP 300 + PHP 1500), under the important notion that a (minimal) fixed amount of this entrance fee must be used directly for dugong conservation efforts. Using 10% of the trip price (as suggested in the question) as the guideline, this results in an amount of PHP 768 (€13) per person (10% of PHP 6183 (average price) + PHP 1500 (entrance fee raise)) which needs to be spent on conservation efforts. Increasing the income for the Dugong Watching Enterprise with PHP 732 (€12) per tourist.

An implementation model, recommendations for the various stakeholders, and the implications of the research findings reviewed in a broader context are presented at the end of the report.

## PREFACE

This thesis originated from the desire and inspiration to make a small part of the world a better place for an animal species that is threatened. The desire to be part of conservation actions for endangered wildlife species started when I encountered unacceptable wildlife watching practices during foreign travels. These experiences made me aware of the critically dangerous world we have created for many creatures.

With this thesis I complete my master in mathematics. To combine my conservation ambition with my master in mathematics, the specialization track *Science, Management and Innovation* was chosen and my internship executed from March to October 2018. This track gave me the opportunity to follow my heart and contribute to animal conservation research. The research project fulfils solely the requirements of the specialization track and does not contain any mathematical research.

Within three handshakes I met Patricia Davis. She founded the conservation organization Community Centred Conservation (C3 Philippines) and offered me the opportunity to contribute to conservation efforts for the vulnerable dugongs in the Philippines. I grabbed the chance and made it fit with the university requirements. The project topic is the emerging tourist trips to swim in close proximity with a dugong in the Calawit waters (Northern Palawan). The sustainability of the current practices remained unknown prior to this research, as well as the tourists' willingness to pay for a dugong experience. The results pointed out which part of the dugong watching practices need improvement and show the financial plasticity offered by the tourists' payments to increase development for the Calawit community and dugong conservation actions.

Submerging in the Philippine life and culture was intense and the reversed culture shock after coming back to the Netherlands cannot be underestimated. It brought me innumerable live lessons and an incredible amount of scientific and conservation knowledge.

I want to thank Patricia Davis and Reynante Ramilo for the opportunity and facilitation of my research project: the guidance by mail, skype and in the field were invaluable. I'm grateful to both my university supervisors. Bart Knols, who opened my eyes and inspired me on the very first day of the specialization track to forget restrictions and hunt for a project that inspires me. Thank you for all the meetings, discussions and feedback, especially during the difficult writing part of my thesis. Marieke van Katwijk, thank you for your immediate enthusiasm for my project, emails full of advice when I was in the Philippines and opening up the world of ecology to me. Thank you, Ignas Heitkönig, for the contacts and inspirational talks. Many thanks to the whole C3 Philippines field office staff: Ginelle Gacasan, Shalom Pareja, Muammar Soniega, Helbert Garay and Crisander Bayos for introducing me, translating for me, facilitating my research and making my stay unforgettable. A special thanks goes out to all Bantay Dugong in Calawit, in particular Jimmel Novero, Harizon Aguilar, Alvin Bazar and Christian Bayos, who welcomed me with open arms and contributed to my research. Moreover, I want to thank Ian Mabitasan for inspiring me for making large efforts for conservation actions and making me feel at home in the Philippine culture. Marieke van Rijn, who brainstormed endlessly with me on how to address the challenging writing part once back in the Netherlands. Jasper de Kleijne, thank you for reviewing my whole thesis in the final stage. Thanks to Erik Goverde, Gemma Tuckwood and Dirk Eeuwes who supported me in the final stage of my thesis. And lastly, I want to thank Niek Vermue, my parents Ad and Karin for all mental support throughout the thesis project and my sister Linda for her help with the design of the report.

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<b>Abstract</b>	<b>4</b>
<b>Executive summary</b>	<b>5</b>
<b>Preface</b>	<b>7</b>
<b>Abbreviations list</b>	<b>11</b>
<b>1 Introduction</b>	<b>12</b>
1.1 <i>Background</i>	13
1.1.1 Global overfishing and fisheries	13
1.1.2 Habitat destruction	13
1.1.3 Tourism	13
1.1.4 Marine life conservation	15
1.1.5 The Philippines	15
1.1.6 The dugong	16
1.2 <i>Community Centred Conservation (C3 Philippines)</i>	17
1.2.1 Dugong tourism in Calawit	17
1.2.2 Prior tourism study in Calawit	18
1.2.3 Sustainability of dugong interaction	19
1.2.4 Dugong Watching Monitoring Form	19
1.2.5 Willingness to pay for dugong interaction	19
1.2.6 Next step of Community Centred Conservation (C3 Philippines)	20
1.3 <i>Goal &amp; research questions</i>	20
1.3.1 Goal	20
1.3.2 Research objectives and questions	20
<b>2 Theoretical framework</b>	<b>22</b>
2.1 <i>Tourism</i>	23
2.1.1 Mass tourism	23
2.1.2 Alternative forms of tourism	23
2.1.3 Comparison between types of tourism	26
2.1.4 Overlap	27
2.2 <i>Willingness to pay</i>	27
2.2.1 Stated preference versus revealed preference	28
2.2.2 Contingent valuation methods	30
<b>3 Methodology</b>	<b>33</b>
3.1 <i>Research location</i>	34
3.2 <i>Dugong watching trips</i>	34
3.2.1 Accompanied dugong watching trips	35
3.3 <i>Following the protocol?</i>	35
3.3.1 Three surveys	35
3.3.2 Analysis	36
3.4 <i>Change in dugong behaviour</i>	36
3.4.1 Answering dugong behaviour related questions in survey	37

3.4.2	Analysis	37
3.5	<i>Dugong Watching Monitoring Forms</i>	37
3.5.1	Available original Dugong Watching Monitoring Forms	37
3.5.2	Analysing the previously collected forms	37
3.5.3	Avoiding ambiguous data and new draft	38
3.5.4	Introduction of improved Dugong Watching Monitoring Form	38
3.6	<i>Willingness to pay</i>	38
3.6.1	Formulating questions	38
3.6.2	Suitable contingent valuation method and bid design	39
3.6.3	Bid price range	39
3.6.4	Additional important factors	40
3.6.5	Analysis	40
3.7	<i>Assessing sustainability</i>	42
<b>4</b>	<b>Results</b>	<b>44</b>
4.1	<i>Participant population</i>	45
4.1.1	Participant profiles	45
4.1.2	Tourists' knowledge	46
4.1.3	Tourists' satisfaction	47
4.2	<i>Results of observed dugong watching practices</i>	47
4.2.1	According to the protocol	47
4.2.2	Opening hours for dugong watching	48
4.2.3	Guidelines explanation	48
4.2.4	Repeated violations during dugong interaction	49
4.2.5	Dugong interaction violations which occurred only once	50
4.2.6	Estimated revenues of the Dugong Watching Enterprise and tour operators	51
4.3	<i>Dugong behaviour</i>	51
4.4	<i>Results from Dugong Watching Monitoring Forms</i>	52
4.4.1	Analysis on deficiencies in data collection	52
4.4.2	Bantay Dugong reflection on the Dugong Watching Monitoring Form	53
4.4.3	Content analysis of Dugong Watching Monitoring Forms	53
4.5	<i>Willingness to pay</i>	55
4.5.1	Data clean-up	55
4.5.2	Information on trips	56
4.5.3	Willingness to pay for a one-day dugong watching trip	57
4.5.4	Willingness to pay for promised conservation efforts	58
4.5.5	Absence of correlations	61
<b>5</b>	<b>Discussion</b>	<b>62</b>
5.1	<i>Reflection on research</i>	63
5.1.1	Strengths of the research	63
5.1.2	Limitations in fieldwork	63
5.1.3	Limitations in research methods	64
5.2	<i>Discussion of results</i>	65
5.2.1	Sustainable dugong watching practices?	65

5.2.2	Dugong disturbance	67
5.2.3	Dugong Watching Monitoring Form	68
5.2.4	Willingness to pay	69
5.3	<i>Other observations</i>	70
<b>6</b>	<b>Conclusions</b>	<b>72</b>
6.1	<i>Sub research questions</i>	73
6.2	<i>Main research question</i>	73
<b>7</b>	<b>Recommendations</b>	<b>74</b>
7.1	<i>Recommendations for Community Centred Conservation (C3 Philippines)</i>	75
7.2	<i>Recommendations for Calawit community</i>	77
7.3	<i>Recommendations for further research</i>	77
	<b>References</b>	<b>79</b>
	<b>Appendices</b>	<b>93</b>
	<i>Appendix A. Community Centred Conservation (C3 Philippines)</i>	94
	<i>Appendix B. Pilot dugong watching trip</i>	96
	<i>Appendix C. Dugong watching protocol</i>	97
	<i>Appendix D. Observer survey</i>	99
	<i>Appendix E. Bantay Dugong survey</i>	104
	<i>Appendix F. Tourist survey</i>	107
	<i>Appendix G. Original Dugong Watching Monitoring Form</i>	114
	<i>Appendix H. Improved Dugong Watching Monitoring Form</i>	115
	<i>Appendix I. Intermediate recommendation for the Dugong Watching Enterprise</i>	117
	<i>Appendix J. Estimated revenues</i>	119
	<i>Appendix K. Absence of correlations</i>	120
	<i>Appendix L. Call to Action</i>	123

## ABBREVIATIONS LIST

C3	Community Centred Conservation
DENR	Department of Environment and Natural Resources
GEF	Global Environment Facility
IUCN	International Union for Conservation of Nature
MOOP	Manual of Operational Practices
NCIP	National Commission on Indigenous Peoples
NTCQ	Nurunutan yang Calamian tagbanua yang Calawit may Quezon (the association of the Calamian indigenous community in Calawit and Quezon)
PCSD	Palawan Council for Sustainable Development
PSA	Philippine Statistics Authority
SPREP	Secretariat for the Pacific Regional Environment Programme
UNEP	United Nations Environment Programme
UN-FAO	United Nations Food and Agriculture Organization
VESS	Vanuatu Environmental Science Society
WTO	World Tourism Organization
WWF	World Wildlife Fund

# Introduction

# 1



*Hadodule uninervis*

Around the world, many animal species are facing pressure of anthropogenic influences and the resulting risk of becoming endangered or going extinct (IUCN, 2016). Animal conservation is needed to provide these species with a better chance of survival. Having an impact in animal conservation, wherever and for whatever species, requires extensive stakeholder management and their active engagement. This makes it extremely difficult and time-consuming to develop and enforce changes in policy, views and habits.

## 1.1 BACKGROUND

### 1.1.1 GLOBAL OVERFISHING AND FISHERIES

Overfishing in oceans is a global problem (McCauley *et al.*, 2017). Fisheries can cause depletion of target and non-target species, trigger indirect effects in marine populations and communities, and change the structure and function of marine ecosystems (Coll *et al.*, 2008). Most of the performed research concludes that intensive fishing has a negative impact on nature conservation. This negative impact is extensively shown in declining biodiversity (Halpern *et al.*, 2008; Hiddink *et al.*, 2011), decreasing marine population sizes (Burgess *et al.*, 2013; Hughes, 1994; Kraus *et al.*, 2005; Rothschild *et al.*, 1994), undesirable proliferation of organisms at lower trophic levels (Hong *et al.*, 2008; Jackson, 2008; Walsh *et al.*, 2011) and direct physical damage from fishing techniques on, for example, coral reefs (Kraus *et al.*, 2005; Lambert *et al.*, 2014; Mak *et al.*, 2005; McCauley *et al.*, 2015). Alongside these negative impacts, there have been results of less damaging effects caused by intensive fishing. For example, overfishing frequently causes the collapse of fish populations but rarely results in extinction (Le Pape *et al.*, 2017). Another result is that the high mobility of many marine animals can offer increased chances for survival through escaping local extinction risks (McCauley *et al.*, 2017).

### 1.1.2 HABITAT DESTRUCTION

Another anthropogenic effect on global waters is habitat degradation and destruction. The loss of key habitats for flora and fauna has several immediate and long-term consequences for biodiversity and entire marine ecosystems. Anthropogenic activities such as fishing (Turner *et al.*, 1999), construction on the seafloor, reclamation of land (Walker *et al.*, 2009; Wu *et al.*, 2017), waste disposal (Jambeck *et al.*, 2015; Jones *et al.*, 2010; Schwarzenbach *et al.*, 2010) and climate change (Heron *et al.*, 2017; IPCC, 2014; WWF, 2009) are the main causes of habitat degradation and destruction, e.g. degradation of water quality (Orth *et al.*, 2006).

### 1.1.3 TOURISM

Besides the increasing pressure on ecosystems by fisheries and habitat destruction, tourism also poses an additional problem (Daby, 2002; Salm, 1985; Tamayo, 2018). Long distance tourism is becoming more popular around the globe. The Asian Pacific region holds the largest growth in the number of tourists (ITB, 2015). A large part of these tourists come to see marine life, for which the Philippines is an accessible and popular holiday/travel destination. One of the many reasons for this is the accessible marine life surrounding the islands. Situated in the Coral Triangle, marine life in the Philippines is found close to the shore, which enables companies to easily organize boat, snorkelling or scuba diving trips. The main selling points of those trips are coral reefs and megafauna. Megafauna are the biggest creatures living under water such as whales, turtles, seals, sharks, rays and dugongs. Tourist trips mostly consist of observing the animals from a boat or swimming around them. As long-distance tourism is getting more popular, the same trend can be seen in marine trips. This type of tourism generates significant economic benefits (Arin & Kramer, 2002; Cesar *et al.*, 2003; Cruz-Trinidad *et al.*, 2011; Pascoe *et al.*, 2014; Samonte-Tan *et al.*, 2007; Tamayo *et al.*, 2018, Van



Beukering *et al.*, 2007) for companies organizing the marine trips as well as the supporting businesses within the local community not directly working with the tourist trips (Teh *et al.*, 2018).

### Mass tourism

The increasing numbers of tourists created the industry of mass tourism (Theng *et al.*, 2015) which resulted in destruction of natural areas (Islam, 2013) when not well managed (Joshi *et al.*, 2016; Zhang & Zhang, 2013). This leads to the question of how people can enjoy the beauty of nature while having a low impact on it. One way is differentiation between mass tourism and alternative tourism. Academically, a clear and universal definition for mass tourism is missing due to its multidimensional character (Vainikka, 2013). An attempt is given by Sezgin and Yolal (2012) by stating “*Mass tourism is [...] pre-scheduled tours for groups of people who travel together with similar purposes (recreation, sightseeing etc.) usually under the organization of tourism professionals*”. Alternative tourism is the opposite of mass tourism and concerns, i.e. self-exploration, individual activities and reaching remote areas.

Tourism is, from an economical point of view, often an interesting market for tropical countries with exotic scenery and special wildlife viewing opportunities. Historically, countries that were developing larger tourism sectors only focussed on accommodating the wishes and demands of tourists (Kilungu *et al.*, 2014). This often resulted in growth towards uncontrolled mass tourism and its resulting impacts on nature. Since the early 1990s, awareness has been raised on negative effects of uncontrolled mass tourism. This was the starting point for sustainable tourism (Weaver, 2013). Currently, more tourists are aware about (some part of) possible negative effects of their travel. Unfortunately, this awareness caused only little change in tourist behaviour to make more sustainable choices, such as buying sustainable products or choosing more environmentally-friendly tour packages (Chafe, 2005). Two main reasons are the convenient access of mass tourism options and the persistent idea that one person cannot make a difference.

### Willingness to pay

Another important limiting factor in making sustainable choices are the financial capability of the tourists (Budeanu, 2007). Their instant joy from an easily accessible trip is difficult to compare with the possible damage caused to the environment in the long run. Most tourists are affluent and feel entitled to enjoy their holiday. Therefore, they are willing to pay for activities they enjoy. How much people are willing to pay for an activity is dependent on their view on the offered experience. It is harder to determine the value of an experience than a material good. Tourists’ willingness to pay for an activity can indicate the value. Knowing tourists’ WTP can open up (financial) opportunities for businesses in the tourism sector to increase the sustainability of the offered packages.

### Ecotourism

Ecotourism is regularly seen as the solution to the problems of those tourist destinations experiencing the negative impacts of ever more demanding tourists and continuously expanding tourist numbers (Novelli *et al.*, 2006). Ecotourism is defined as: ‘environmentally responsible travel to natural areas, to enjoy and appreciate nature (and accompanying cultural features, both past and present) that promote conservation and have a low visitor impact and provide for beneficially active socio-economic involvement of local people’ (The Nature Conservancy, 2017). Ecotourism in a marine environment can potentially offer long-term sustainable benefits, for people and the animal species involved, although it needs proper management. Well-managed ecotourism has proven to generate sustainable livelihoods for local communities and potentially providing long-term solutions for conserving large marine species. There are locations where earning an income is difficult, but where ecotourism may offer some options. In those places, long-term financial benefits for local communities are possible (O’Malley *et al.*, 2013). At the same time, management of a wildlife-



centred tourist industry provides unique challenges. The ever-increasing number of tourists visiting low or middle-income countries can have large negative impacts on nature (Bil *et al.*, 2015; Newsome *et al.*, 2004). Habitat can be damaged, or animals can become dependent on humans, for example, when they distribute food or be disturbed in their natural behaviour when boats and/or people come too close (Newsome *et al.*, 2004).

#### 1.1.4 MARINE LIFE CONSERVATION

Marine conservation is rising on the global agenda. Unfortunately, the IUCN's list of threatened species is expanding (IUCN, 2017). Historically, most animal conservation projects focused on terrestrial animals. Interest in marine conservation surfaced later, mainly caused by unknowns about life below the water surface. Even today, a large part of the global waters remains a mystery, but there is consensus that all marine life is suffering in some way from anthropogenic influences in or outside their habitat (McCauley *et al.*, 2017). To limit or neutralise those anthropogenic influences, marine conservation projects try to change the course of declining biodiversity in global waters. Some approaches used in terrestrial animal conservation, could be used to create a better understanding how to approach marine conservation. For example, turning poachers into conservation rangers, which is successfully practiced in Africa (Rushby, 2014). Although these terrestrial conservation ideas can be used for guidance, marine mammals and other marine fauna require their own unique approach. Their high mobility in the widespread waters is problematic for monitoring and creating an overview of where animals exactly travel, stay, breed and feed. Knowing these locations can help enormously in conservation management (Schofield *et al.*, 2013). The approach used by Schofield *et al.* (2013), i.e. GPS tracking of animals, has a general application in zoning for marine protected areas. Location as well as topography is very important in finding effective ways of conservation. Unfortunately, in developing countries the tracking of endangered animals is often too expensive and knowledge about locations must be collected from local communities or land-based sightings. This data collection is less precise than GPS tracking, but can give great insights without large expenses.

#### 1.1.5 THE PHILIPPINES

The Philippines is a developing country that consists of more than 7000 small islands. Its geography consists of different terrains: terrestrial, a littoral zone (land between high and low tide) and the deeper waters (Dawson & Santos, 2016). In publications about the geography of islands, the majority is studied from a terrestrial perspective (Dawson & Santos, 2016), but a marine perspective seems to be completely different. The immense size of oceans and even relatively small seas puts researchers into difficult positions. For example, the absence of closed marine ecosystems makes it rather difficult to restrict research to a confined area (Dawson & Santos, 2016). At the same time the island geography creates many possibilities for marine species themselves, because the majority lives in shallow waters, which is abundant in the Philippines.

##### Regulation and stakeholders

The Philippines is located in the Coral Triangle and contains the highest marine biodiversity in the world (Reaka *et al.*, 2008; Sanciangco *et al.*, 2013). This marine environment caused an embedding of marine culture and exploiting nature as a way of survival in the Philippine culture (FAO, 2017). The Philippines is a relatively poor country and local people are often highly dependent on the waters surrounding them as a source of food and income (FAO, 2005). On the other hand, they depend on marine conservation to maintain their livelihood. This tense relation makes regulation necessary but also challenging to make changes in for example fishing regulations and animal welfare. An example of conservation actions is setting up a closed season or marine protected area (MPA), meaning that fishing, building and sometimes even tourism activities are permanently or temporarily prohibited in a restricted area.



Proponents of MPAs, such as conservationists and politicians, called for marine protected areas (IUCN 2005, Recommendation V.22), saying that such a move was necessary to protect the future of industry and the marine ecosystem (Agardy, 1994; García-Charton *et al.*, 2008; Sobel & Dahlgren, 2004; Valiullina & Valeev, 2017). Opponents of area restrictions, such as the fish collectors, traders, and municipal governments argued that these restrictions would have a high impact on their livelihoods and greatly increase poverty in specific regions (Fabinyi, 2009). These opposing arguments must be considered when trying to change the future of threatened species. Every change in regulation has similar supporting and opposing stakeholders.

### 1.1.6 THE DUGONG

The megafauna species dugong (*Dugong dugon*, Lacépède) is affected by the above-stated anthropogenic influences. The dugong is listed as vulnerable in the IUCN red list (Marsh & Sobotzick, 2015). It is a mammal, between 2,5 to 3 meters long, weighing up to 500 kg and living on a diet of seagrass (The Society of Marine Mammalogy, 2018). It is a slow-reproducing species, with one calve every 3-7 years. Dugongs inhabit tropical coastal waters between East Africa and Vanuatu. Calawit island (Busuanga, Palawan, Philippines) is one of the last hotspots for dugongs due to the presence of large seagrass meadows.

#### Threats

Regardless of the relatively good condition of the seagrass around Busuanga, dugongs face threats, directly and indirectly, because of human activity (Marsh *et al.*, 2011). The major land- and sea-based threats in Busuanga are natural disasters, incidental capture in fishing gear, boating activities, reclamation and development of tidal areas, destructive fishing (e.g. cyanide and dynamite fishing) and disturbance of boat traffic, tourism, noise pollution and mining (Davis & Poonian, 2007; Kiszka *et al.*, 2009; March & Sobotzick, 2015). The seagrass, on which they are fully dependent, is facing its own threats: aquaculture, untreated sewage disposal, reclamation of land, damaging fishing techniques and climate change (Grech *et al.*, 2012; March & Sobotzick, 2015; Poonian *et al.*, 2016)

#### Conservation

Dugong conservation only has a short history, with the start of the first project in 2007 (Advanced conservation, 2018). Dugong conservation goes hand in hand with seagrass conservation, one cannot survive without the other as dugongs are also called the 'farmers of the sea' (C3, 2018). There are global and local NGOs trying to protect the dugong and its habitat. The global organizations: Dugong conservation, GEF, SPREP and WWF, are mainly fund raisers and distributors, that fund multiple conservation projects (for different species) and work together with local organizations (GEF, 2018; Dugong Conservation, 2018). All local NGOs are spread over dugong habitat zone: Australia (SPREP, 2018), India (Conservation India, 2018), Indonesia, Madagascar (Community Centred Conservation, 2018; Mahiri network, 2018), Malaysia, Mozambique (SOS, 2018), New Caledonia, Palau, Papua New Guinea (SPREP, 2018), Philippines (Community Centred Conservation, 2018), Sri Lanka, Solomon Islands, Timor-Leste and Vanuatu (Advanced Conservation, 2018; VESS, 2018). Their main activities are creating awareness about importance of the dugong on local and global level, engaging with local communities to improve awareness and fishing techniques, and improving governance to facilitate changes in regulations for the protection of the dugong. Other activities, less regularly executed, are seagrass mapping, lobbying and creating MPA's and providing educational material.

There are also organizations that use the dugong as a flagship and collect monetary donations but are not clearly involved in dugong (and seagrass) conservation besides creating awareness about the situation (WWF, 2018; Save the dugong, 2018). All organizations are raising awareness about the vulnerable status of the dugong. Clearly this is still necessary, also at the local level where conservation actions have been on-going for a couple of years now.



## 1.2 COMMUNITY CENTRED CONSERVATION (C3 PHILIPPINES)

Community Centred Conservation (C3 Philippines) is an international conservation organization that focuses on marine life and marine nature conservation. One main field office is situated on Busuanga Island, Palawan, Philippines, where the main focus is on dugong conservation (detailed information about C3 Philippines can be found in appendix A). The waters surrounding Busuanga Island are one of the last hotspots for dugong globally. The C3 Philippines conservation strategy is integrating and cooperating with local communities. The ultimate goal is that all involved communities will be able and willing to continue conservation efforts independent from C3 Philippines. To accomplish this, the organization raises awareness about the threatened status of the dugongs and the importance of marine biodiversity, it shares knowledge with the communities, gives advice on related topics, and organizes research events in cooperation with communities. C3 Philippines is aware that invaluable information about the marine environment resides within the local communities and is often dependent on it. Within Busuanga Island, C3 Philippines has the closest relationship with the indigenous community from Calawit (northern Busuanga).

### 1.2.1 DUGONG TOURISM IN CALAWIT

In 2010, one tour operator, named Dugong Dive Center, started to offer dugong watching trips for tourists around Busuanga Island. Their trips started off with looking for dugongs and having a lucky encounter with one. Their tourist practices were not sustainable as the dugongs moved to other areas to feed, rest and play due to disturbance from the dugong watching trips. First to Cheey and later to Calawit. The tour operator followed the dugong into Calawit waters. In 2017, residents of Aban-Aban (village northern end of Calawit) started reporting sightings of regular visits of boat(s) with tourists getting in the water to swim with the dugongs, later C3 Philippines witnessed the same. Dugong Dive Center, the main tour operator concerned, was unaware of the ancestral classification of the waters of Calawit. On March 8, 2017, the first stakeholder meeting about dugong watching trips was organised. Stakeholders, such as members of the local community, tour operators/resorts, DENR

(Department of Environment and Natural Resources) and C3 were present at the meeting. In this meeting the laws behind protection of dugong were explained as well as the status of the ancestral waters of Calawit. This formed the basis for the Memorandum of Understanding (MoU) and a tour operator registration form drafted by C3 Philippines and the community of Calawit, together with some input from the tour operators. In the MoU and the official registration form, tour operators are obliged to hand over their official dive master license, company registration and other official papers. When all documents are complied and the MoU and registration form are signed, tour operators are allowed to practice dugong watching trips in three selected areas: Aban-Aban, Dimipac island and Maltanubong island, see Figure 1 for a map. Additionally, an entrance fee for the Calawit ancestral water is asked. In return a certified Dugong ranger (Bantay Dugong) will accompany every trip to

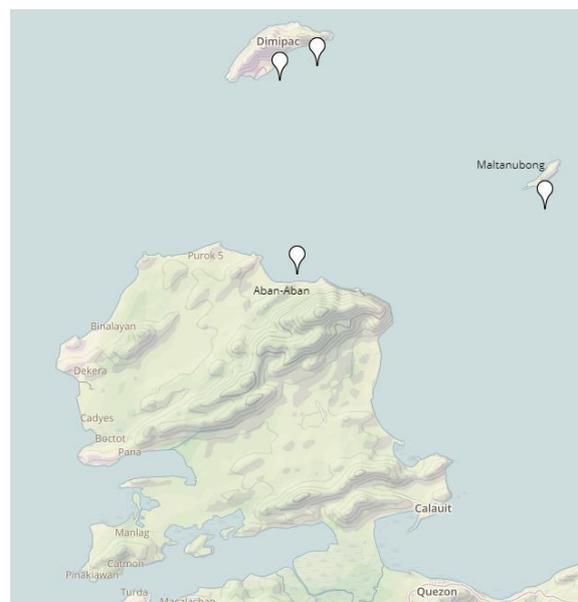


Figure 1: *The three islands of Calawit: Calawit, Dimipac and Maltanubong. The white markers point out the official dugong watching sites (Google Earth (Mapbox), 2018).*

secure sustainable dugong watching practices. These new regulations were formalized and approved during the second stakeholders' meeting on May 19, 2017.

### Dugong watching protocol

The main concern of C3 Philippines is the dugongs in Calawit, but as they work closely with the community of Calawit, they also support the opportunity for a new sustainable livelihood close to their homes. The Calawit community founded the, independently owned, Dugong Watching Enterprise. This enterprise facilitates the Bantay Dugong (dugong rangers) to accompany the dugong watching trips and collects the entrance fee from the visitors. C3 Philippines is not actively involved in the Dugong Watching Enterprise; not financially, not as a board member nor in executing the trips. They only have an advisory role in the dugong watching practices. C3 Philippines created a protocol for the dugong watching trips based on the *Code of Practice for the Sustainable Management of Dugong and Marine Turtle Tourism in Australia* (Birtles *et al.*, 2005) developed by James Cook University with input from relevant government agencies and conservation groups. The goal of the protocol is to minimise the disturbance in safety and peace of the dugong. The protocol was officially adopted by the community of Calawit (see Appendix C). The protocol explains restrictions on human behaviour around the dugong, which activities are not allowed in the area and what to do in an emergency concerning a dugong. All visitors have to know these regulations when participating in a dugong watching trip.

### Bantay Dugong

The Bantay Dugong (dugong ranger) who accompanies a dugong watching trip must be officially certified as Bantay Dugong by having attended the four-day orientation 'Dugong Ecology and Conservation' organised by C3 Philippines at 27-30 January 2017. Additionally, the certified Bantay Dugong must have joined the special 'Calawit Bantay Dugong training on Dugong Watching' given on October 21, 2017. The training focused on general procedures for dugong watching as the Dugong Watching Monitoring Form not yet existed. During the training C3 Philippines taught the participants about the ecology of dugongs, recognition of seagrasses, explanation of dugong watching guidelines, emergency procedures in case of a dugong stranding on a rocky shore or due to fish net entanglement. Becoming an official Bantay Dugong for Dugong Watching obliges them to report all dugong sightings and officially allows them to accompany dugong watching trips to guard for safety of the dugongs involved.

### 1.2.2 PRIOR TOURISM STUDY IN CALAWIT

From November 2017 until February 2018 an interdisciplinary analysis of the possibilities for dugong ecotourism in Calawit was undertaken by C3 Philippines. Currently, *"The dugong watching practice can be described with a wildlife tourism model [focused on spotting animals and is less concerned with the impact of the watching activities on the environment and the dugongs themselves]. This means it is limited by the carrying capacity of the ecosystem and dependent on the satisfaction of the customer (Reynolds & Braithwaite, 2001). Because of the carrying capacity of the ecosystem, the business is limited in growth. The business is not able to scale-up and even the current intensity should be adapted."* (Onwezen, 2018). The ecotourism analysis showed that current practices will not be sustainable in the long run. The weaknesses are *"miscommunication with stakeholders and with guests, inefficient management, lack of equipment/communication system, lack of implementation of Memorandum of Understanding (MoU), and guidelines, untrained guides, no [marine] zonation (yet) [dugong protection area, dugong watching areas, fishing areas, etc.], no legal registration, communication gap (authority and English, especially for Bantay Dugong), financial allocation and small community conflict (speed limit, revenues and transparency)"* (Onwezen, 2018).



### Blind spot

The limitation of this conclusion is that it is based on interviews and informal discussions with members of C3 Philippines and the indigenous community and not on actual observation in the field. Due to lasting internal conflicts within the indigenous community concerning the approach towards the future of dugong watching, at the time of the research further stakeholder analysis was off limits. A lack of implementation of MoU and guidelines is mentioned, but the actual practices of the dugong watching trips remained a blind spot to C3 Philippines. This raises the question: what happens during the dugong watching trips? Especially the implementation of the supplied protocol was a point of interest.

### 1.2.3 SUSTAINABILITY OF DUGONG INTERACTION

Dugong are easily disturbed by external factors. (Anderson, 1981; Hodgson & Marsh, 2007) Therefore, it is probable that dugongs can suffer from immediate and long-term disturbance from dugong watching activities due to increased boat traffic and possible harassing behaviour from tourists. The actual dugong-tourist interaction poses the biggest threat for disturbance. As the tourists in Calawit are allowed to swim with the dugong whilst snorkelling or scuba diving, they have the opportunity to come in very close proximity of the animal. As the implications for the dugong can be big, C3 Philippines wants to know what happens during the underwater interaction and if the dugong (behaviour) is affected in any way.

### 1.2.4 DUGONG WATCHING MONITORING FORM

To gain more insight in the dugong watching trips and its consequences the Dugong Watching Monitoring Form was taken into use on November 24, 2017. The form is an attempt to collect important (conservation) data about the practices, activities and dugongs involved with the dugong watching trips. The Dugong Watching Monitoring Form was the output from the Manual of Operational Procedures (MOOP) workshop on dugong watching with C3 Philippines and the Calawit community. The workshop took place on November 22-23, 2017 and was held in a classroom setting. C3 Philippines adjusted the Dugong Sighting Form (form used for dugong sightings by fishermen) with important questions related to dugong watching activities which were initiated by the Bantay Dugong present at the workshop. They created a Dugong Watching Monitoring Form on the spot, which was a direct collaboration between C3 Philippines and the experiences of the Bantay Dugong who had already guided dugong watching trips. Within the same workshop the new form was presented, and instructions on how to use it were given.

From November 24, 2017 onwards all Bantay Dugong that join a dugong watching trip are obliged to fill out the report and sign it. After the implementation no evaluation has been done. C3 Philippines is concerned about possible ambiguous data gathering and wants to improve the form such that all collected data can be used for conservation purposes.

### 1.2.5 WILLINGNESS TO PAY FOR DUGONG INTERACTION

The entrance fee for the tourists to enter the waters of Calawit is only a small fraction of what they pay to the tour operators to join a dugong watching trip. The entrance fee is PHP 300 (€5), which is included in most offered packages for snorkelling or diving. Package prices range from PHP 2,650 (€45) to PHP 10,500 (€175) and include one, two or three dives, of which one is a dugong-dive, and diving equipment. Therefore, the entrance fee is in all cases less than 12% of price of the trip. Currently, the tourism income for Calawit is only the entrance fee. As tourists stay on their dive boat, there is no additional earnings from, for example, accommodation, restaurants, convenience stores or souvenirs.



For wildlife and/or nature tourism there are two general ways to earn a livelihood: low prices combined with many tourists or few tourists paying high prices (Duffy & Moore, 2010; Pellis *et al.*, 2015; Smart, 2018). The PHP 300 (€5) entrance fee is based on low prices and many tourists, which potentially causes a lot of disturbance for the dugong from a conservationist point of view. C3 Philippines prefers to shift from mass tourism to a high-end tourism approach to minimize dugong disturbance, while the Calawit community is concerned to raise the entrance fee because they are afraid that a higher entrance fee might withhold tourists from doing dugong watching trips. It remained unknown how much people are willing to pay for a dugong interaction and it is a question that C3 liked to see answered.

### 1.2.6 NEXT STEP OF COMMUNITY CENTRED CONSERVATION (C3 PHILIPPINES)

Since the beginning of the foundation of the Dugong Watching Enterprise, C3 Philippines has fulfilled a significant advisory role to the community. This continued also after the dugong watching trips started in May 2017. Unfortunately, after one year of executing dugong watching trips in Calawit, almost nothing has changed. C3 Philippines keeps repeating the same advice with the same arguments. As their advice is not used for changing practices, they want to collect scientific data on the possible consequences of current practices. Backed up by scientific conclusions, C3 Philippines is in a stronger position to recommend changes to have a long-term sustainable tourist trips, backed up by scientific conclusions, for the dugongs while staying financially viable for dugong conservation as well as a livelihood for members of the community.

#### Long-term sustainability

For long-term sustainability of the dugong watching trips, a proportion of the profits (each year) need to be reinvested into training of Bantay Dugong and dugong monitoring costs. C3 Philippines will not seek external funding for these purposes, it would rather be integral with the Dugong Watching Enterprise business plan. This way, the Calawit community can maintain the sustainability of dugong watching tourism independently.

## 1.3 GOAL & RESEARCH QUESTIONS

### 1.3.1 GOAL

Minimizing disturbance caused by (eco)tourism practices in the waters of Calawit in cooperation with the community of Calawit, while taking traditions, culture and new livelihoods into account.

### 1.3.2 RESEARCH OBJECTIVES AND QUESTIONS

During the meeting of the Committee of Elders on March 11, 2018, the research objectives and questions were approved by the community of Calawit; the meeting on April 15, 2018, approved the research methods.

**Main research question:** What could be improved in the current practices of the dugong watching trips to make these more sustainable and at the same time stay (financially) attractive for both the tourists and the Calawit community?

To investigate the blind spot of C3 Philippines on the current practices of the dugong watching trips, as explained in paragraph 1.2.2 the first sub question was formulated:

1. To what extent is the Dugong Watching Enterprise of Calawit and its Bantay Dugong following the dugong watching protocol?



To examine the current practices of the dugong watching activities on sustainability, as noted in paragraph 1.2.3, a second sub research question was added:

2. What is the reaction of dugongs towards tourists that swim with them in close proximity?

Prior to this research, the Bantay Dugong collected data on the dugong watching tips with the Dugong Watching Monitoring Form. Ambiguous data was collected using this form. To find out whether the collected data was useful or not and how it could be improved, as elaborated on in paragraph 1.2.4, a third sub research question was formulated:

3. How can the Dugong Watching Monitoring Form, filled in by the Bantay Dugong, be improved such that no ambiguous data is collected?

In paragraph 1.2.5 the interest in minimizing disturbance by increasing prices was explained. To explore possibilities to make the dugong watching trips a more high-end activity, an analysis on the willingness to pay of the visiting tourists was needed. This resulted in the following sub research question:

4. How high is the willingness to pay by tourists to join a dugong watching trip?



A watercolor illustration of the seagrass Cymodocea serrulate. The image shows several green stems and leaves. Some stems are upright and feature distinct, irregular brownish patches, likely representing damage or disease. Other stems are more slender and appear healthy. The background is plain white.

# Theoretical framework

# 2

## 2.1 TOURISM

### 2.1.1 MASS TOURISM

Mass tourism has been researched for decades but is still lacking a fixed definition due to its multidimensional character. The tourism industry is also continuously changing due to its impact. Vainikka (2013) stated that it has been widely acknowledged that tourism demand and supply are becoming more independent, active, individual and flexible, which is interpreted either as the end of mass tourism or its change into more diverse forms. By lacking a fixed and universal definition, comparing tourism types is irrelevant when points of comparison are not well defined nor explained (Vainikka, 2013).

A basic definition of mass tourism is “A distinct form of tourism that can be separated from the others based on its linkage to mass production, mass consumption and mass tourist destinations” (Vainikka, 2013). But it can also be defined with four conditions: “Mass tourism only exists if [...] the holiday is ‘standardized’ and ‘rigidly packaged’, it is mass produced, it is mass marketed to an ‘undifferentiated clientele’, and it is ‘consumed *en masse*’ by tourists without consideration of local norms or culture” (Poon, 1993 & 2003). Mass tourism has led to many negative effects due to the enormous pressure created by large visitor numbers (Fennell, 2013; Ghoddousi *et al.*, 2018; Rastogi *et al.*, 2015; Sunlu, 2003). To break from this mass tourism many other types and forms of tourism have emerged. All with their own specific focus.

### 2.1.2 ALTERNATIVE FORMS OF TOURISM

Many alternative forms of mass tourism exist, of which alternative tourism is the overarching type. This section explores the eight most common types of tourism: alternative tourism, ecotourism, nature-based tourism, geo tourism, green tourism, sustainable tourism, ethnic tourism and cultural tourism.

#### Alternative tourism

Alternative tourism is often seen as the opposite of mass tourism (Buckley, 2009; Vainikka, 2013). It distinguishes itself by individual travellers or niche travellers undertaking activities that are not offered by traditional travel agencies (Buckley, 2009). The characteristics of alternative tourism are: (1) nature and culture preservation and tourist activities that have a low impact on the environment, (2) improve the welfare of host societies, (3) tourists have respect for visited environments and are interested in its complementary culture, (4) increase the participation of host societies in tourist activities, (5) improve sustainability of tourism by controlling the volume of tourist consumption, development of communities and conservation of resources, and (6) educate and involve tourists (Theng, 2015). All other types of tourism can be positioned under the umbrella of alternative tourism (Figure 2).

#### Ecotourism

Ecotourism is one of the most known types of alternative tourism. Definitions of ecotourism used in literature vary. Ecotourism is defined by Theng *et al.* (2015) as “regulat[ing] attendance levels and controll[ing] the consumption of natural resources [...] with an increasing importance to the human dimension by focusing on the cultural aspect and heritage”. The Nature Conservancy (2017) uses a definition in which socio-cultural and conservation aspects are more important: “environmentally responsible travel to natural areas, to enjoy and appreciate nature (and accompanying cultural features, both past and present) that promote conservation and have a low visitor impact and provide for beneficially active socio-economic involvement of local people”.



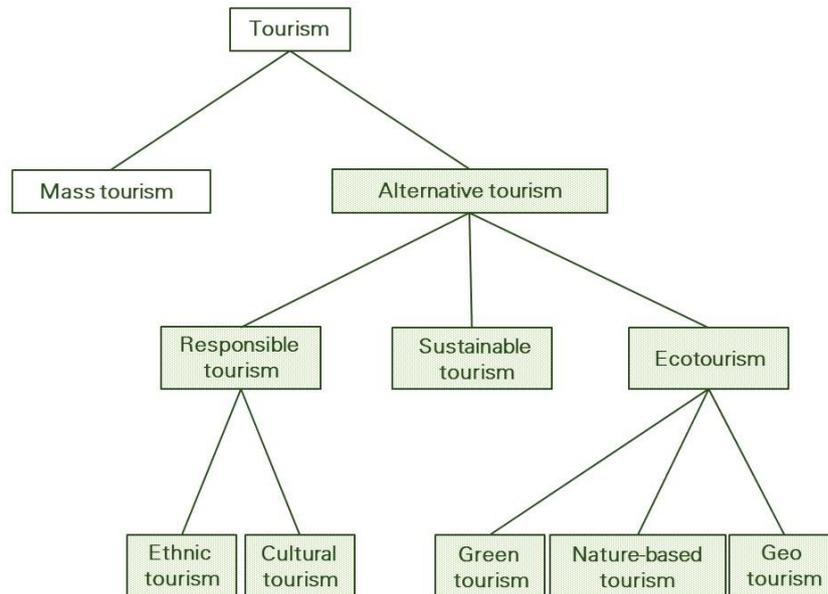


Figure 2: This diagram shows the subdivisions in tourism formats. The green coloured boxes represent alternative types of tourism.

The starting point of ecotourism is the wish to observe and appreciate nature. Further characteristics of ecotourism are: (1) minimize impact, (2) stimulate nature and culture conservation, (3) educate and create more awareness, (4) encourage community participation and supply income opportunities, and (5) empower vulnerable groups (Cobbinah, 2015; WTO, 2001).

Unfortunately, the term ecotourism also became a selling point and is therefore regularly used inappropriately to attract tourists while their offered activities, accommodation or transportation is only marginally ecologically responsible (when looking at the definitions and characteristics). This resulted in a two-sided image of ecotourism: it is sometimes seen as the opposite to mass tourism (Walpole & Goodwin, 2000), but also as its variant (Collins-Kreiner & Israeli, 2010).

The name ecotourism can be traced back to looking at the ecological impact of tourist activities. Therefore, determining the ecological footprint of tourism activities is one of the tools to assess sustainability (Marzouki, 2012). The ecological footprint measures all consumed goods and resources (e.g. transportation, accommodation and food) of the travel for an individual or group. The output is an amount of biologically productive land or sea area. Via this output different types of activities and/or destinations can be compared in an ecological manner (Marzouki, 2012).

### Nature-based tourism

Nature tourism or nature-based tourism is a part of ecotourism (Figure 2), but less concerned with culture and economics. Nature-based tourism is enjoyment of relatively undisturbed natural environments, phenomena or its features (Buckley, 2009; Valentine, 1992). According to Weaver (2001) it is related to adventure tourism, sustainable tourism and cultural tourism, besides its clear relation with ecotourism.

The principle activity is observing and appreciating nature (Buckley, 2009). There are three types of nature-based tourism activities: (1) activities that are dependent on nature, (2) activities that are enhanced by nature, and (3) activities for which a natural setting is incidental (Valentine, 1992).



### Geo tourism

While nature-based tourism can be enhanced by nature or accidentally occurs in nature, geo tourism is centred around a geological feature or landscape which serves as the attraction (Buckley, 2009; Dowling, 2013). Geo tourism is based on the idea that the environment is composed of abiotic (non-living), biotic (living) and cultural components. Fascination for a geological feature is the start of understanding the character of a region or territory (Dowling, 2013) and therefore has a high educational value. Appreciation and understanding of geological interesting environments can serve as an incentive for the conservation of geodiversity. The interesting areas can range from rough nature to man-made urban areas (Dowling, 2013), which is the main distinction between other nature-focused types of tourism where only natural areas are visited.

### Green tourism

Green tourism is any tourism activity operating in an environmentally friendly manner (Pintassilgo, 2016). Its main focus is environmental protection (Pintassilgo, 2016) but also, more broadly, as “tourism activities that can be maintained, or sustained, indefinitely in their social, economic, cultural and environmental contexts” (UNWTO, 2012).

The United Nations Environment Programme (UNEP) believes that green tourism is an important factor for the future of a sustainable economy (Pintassilgo, 2016). Green tourism should lead to “improved human wellbeing and social equity, while significantly reducing environmental risks and ecological scarcities” (UNEP, 2011). Green tourism is clearly related to ecotourism. The difference is found in the educational focus and raising awareness, which is prominent in ecotourism. While improvement of living standards and economic opportunities for local communities are more represented in green tourism than in ecotourism.

### Sustainable tourism

Sustainable tourism is “tourism based on the principles of sustainable development” (UNEP & WTO, 2005). This form of tourism aims to take current and future impacts into consideration. The economic, social and environmental impact are all important. The positive impacts of all facets are desired to be maximized (Goodwin, 2016) while the needs of visitors, the industry, the environment and host communities are all fulfilled as much as possible (WTO, 2018).

Characteristics of sustainable tourism are: (1) optimal use of environmental resources while maintaining essential ecological processes and contribute to natural resources and biodiversity conservation, (2) respect and conserve cultural heritage and traditional values, (3) ensure viable, long-term economic operations, and (4) provide socio-economic benefits with an equal distribution to all stakeholders. Achieving and maintaining a sustainable form of tourism is a continuous process which requires monitoring of impacts and possibly restrictive enforcements. (UNEP & WTO, 2005).

### Responsible tourism

Responsible tourism is “about making better places for people to live in and better places for people to visit” (Goodwin, 2016), specifically in this order. In responsible tourism all stakeholders such as operators, hoteliers, governments, local people and tourists take their own responsibility to make tourism more sustainable.

Characteristics of responsible tourism according to the Cape Town Declaration (on Responsible Tourism) (2018) are: (1) minimizing negative economic, environmental and social impacts, (2) improving economic benefits, wellbeing, working conditions and access to the industry for local people of host communities, (3) involving locals in decision making, (4) positive contributions to nature and culture conservation, and to maintaining the world’s diversity, (5) educating tourists and creating opportunities to create meaningful connections with local people, (6) providing access for



people with disabilities and the disadvantaged, (7) it contributes to and builds local pride and confidence.

While sustainable tourism focusses on maximizing the positive impacts of tourism, responsible tourism is “about identifying the important issues locally and addressing those” (Goodwin, 2016).

### Ethnic tourism

Ethnic tourism, in general, “relies on attracting tourists to see sites connected to the cultural and historical heritage of ethnic minorities” (Egresi & Hoşgeçin, 2014). Experiencing cultural and historical heritage including attendance to traditional and modern cultural presentations and performances. These performances can be slightly adjusted or specifically developed for tourists (Moscardo & Pearce, 1999).

The most extreme staged cultural experiences are found in China where, for example, ethnic theme parks have been established. From a staged experience point of view, ethnic tourism can be defined as: “tourism motivated by a tourist’s search for exotic cultural experiences, including visiting ethnic villages, minority homes and ethnic theme parks, being involved in ethnic events and festivals, watching traditional dances or ceremonies, or merely shopping for ethnic handicrafts and souvenirs” (Yang *et al.*, 2008). The goal of these ethnic theme parks is restoration of lost and/or threatened parts of ethnicity, diversity and heritage (Yang, 2011).

### Cultural tourism

Cultural tourism is a type of tourism “in which tourists appreciate tangible and intangible aspects of culture at a given destination” (Yamashita, 2016). This can be achieved by experiencing and learning about architecture, arts, dances, festivals, cuisines and history (Yamashita, 2016).

In the modern world culture and economics are interwoven in everyday life. According to Lanfant *et al.* (1995) it is not about labelling tourism activities or destinations as ‘good’ or ‘bad’, but rather how host societies use contemporary economic options to maintain or redefine their cultural identities. In this view, tourism offers opportunities to preserve the remains of history and heritage (Yamashita, 2016).

### 2.1.3 COMPARISON BETWEEN TYPES OF TOURISM

All types of tourism include environmental, socio-cultural and economic aspects in their practices. The difference between tourism types becomes clear when these are assessed according to their strength of focus on environmental, socio-cultural and economic aspects. In Figure 3 all tourism types mentioned above are placed in the triangle with each corner corresponding with one aspect. A point placed in a corner represents a tourism type focussed merely on that aspect. While tourism types positioned closer to the centre of the triangle balance the focus over all three aspects. It has to be noted that all tourism types are concerned and dependent on economic feasibility and financially rewarding models, otherwise businesses cannot survive, but the economics of a tourism type is not necessarily a focus point.



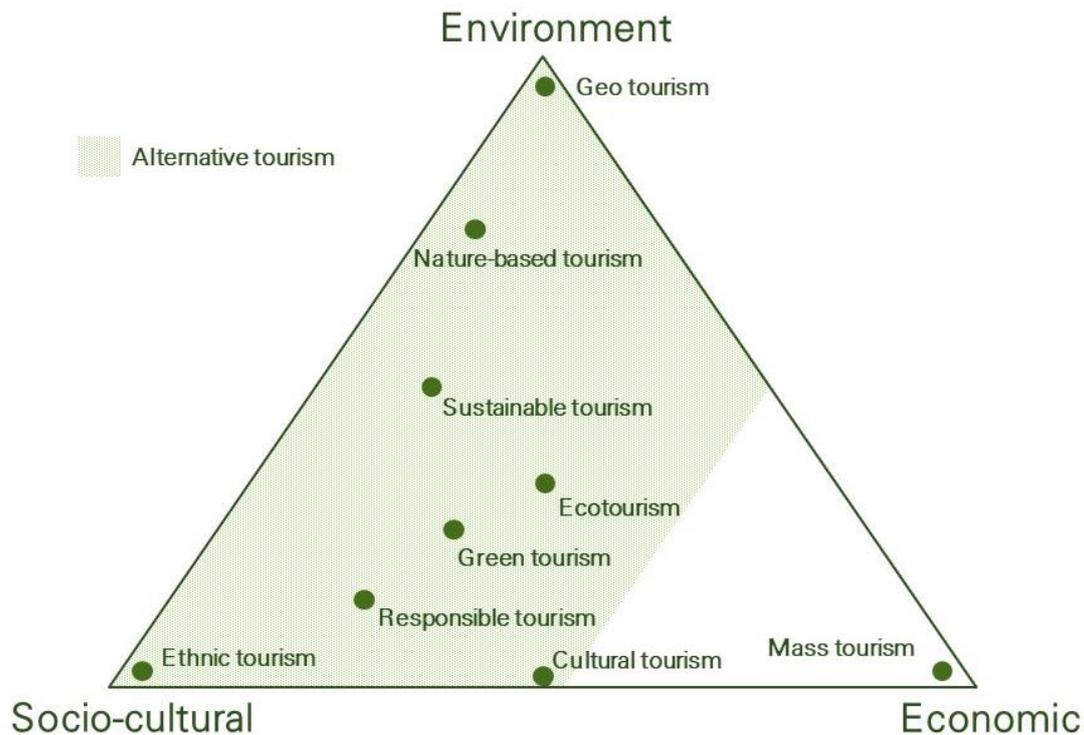


Figure 3: The green dots, corresponding to the tourism types, show how the focus on each the three aspects (environment, socio-cultural and economic) are distributed. The closer the dot is placed to a corner of the triangle, the more important that aspect is. Alternative tourism is the broad concept marked with the light green area in the triangle.

#### 2.1.4 OVERLAP

There are multiple focus points that all types of alternative tourism have in common such as environmental protection and conservation, preservation of cultural and social heritage, increasing the involvement of local people in project development and the intention to fairly distribute improved living standards among community members and optimization of the economic benefits for the host community (Theng *et al.*, 2015)

Ecotourism is placed exactly in the middle of the triangle as it tries to balance all three parts. The economic aspect is the automatic driver, similar to most tourism businesses, while taking care and protecting the visited environment and keeping a strong and unique socio-cultural influence on the visitor's experience.

Summarizing the most overlapping characteristics of all forms of tourism gives a general idea on the important issues when assessing the sustainability of a tourist activity. These characteristics are: (1) minimizing impact of the activity on the environment as well as on the socio-cultural side, (2) improving the welfare of host societies, (3) controlling pressure on natural resources and biodiversity, (4) educate tourists and host communities about the values of their environment and heritage, and (5) increase participation of host societies and ensure long-term economic operations.

## 2.2 WILLINGNESS TO PAY

Willingness to pay (WTP) is the concept of determining how much people are willing to spend on a certain product, service or a non-material utility. WTP is becoming increasingly popular within



different segments such as healthcare (Lin *et al.*, 2013; Olsen & Smith, 2001), products and services (Miller *et al.*, 2011; Wertenbroch & Skiera, 2002) and nature conservation (Bhandari & Heshmati, 2010; Han *et al.*, 2011; Hjerpe & Hussain, 2011; Lew, 2015).

There are several ways to determine the WTP. Choosing a method depends on what product, service or non-material utility is investigated, financial restrictions, time frame and available respondents (Breidert *et al.*, 2006).

### 2.2.1 STATED PREFERENCE VERSUS REVEALED PREFERENCE

The first distinction in WTP methods is researching 'stated preference' versus 'revealed preference'. Stated preference is asking respondents what they would be willing to pay for a hypothetical product. While revealed preference is determining the WTP for a product based on actual choices made by customers (based on actual sales data). The results can differ enormously (Louviere *et al.*, 2000). All base methods: market data, experiments, direct and indirect surveys, can be divided under these two categories (Figure 4). This paragraph is based on the article of Breidert *et al.* (2006).

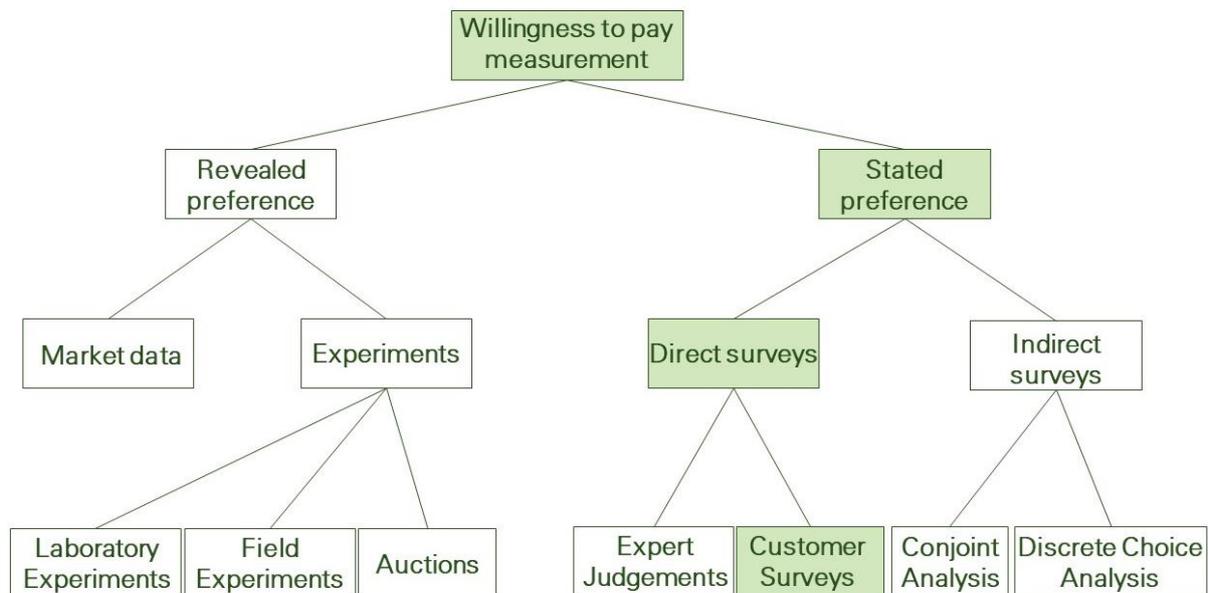


Figure 4: Classification framework for methods to measure willingness to pay. The blue markings show applicable method for researching willingness to pay for conservation efforts. Adapted from Breidert *et al.* (2006).

#### Market data and experiments

Revealed preference generates more reliable outcomes, especially when it is based on actual market data (Kamakura & Russell, 1993; Leeflang & Wittink, 1992). Unfortunately, data on spending habits is not always available. For non-material utilities this data is rarely present in the form of real market data due to the fact that utilities often cannot be bought at a store or company. Another way of generating similar data is through executing laboratory or field experiments.

#### Different types of experiments

In laboratory experiments the respondents receive a pre-set amount of money with which they can buy products. These products and their prices need to vary systematically to find out what the respondents are willing to pay for the targeted product compared to other offers. The downside is the respondents' awareness of the experiment setting (Silk & Urban, 1978).



Field experiments are based on the same principles as laboratory experiments, but executed in real shopping environments. Therefore, it is costlier and time consuming, but reduces the respondents' awareness of participating in a test can be reduced (Gaul *et al.*, 1996).

As a third option an auction can be held, where participants raise their bids until the highest price they are willing to pay for the product. There are a variety of different auction models and also options in choosing which bid suits the experiment (Becker *et al.*, 1964; Chernev, 2003; Spann *et al.*, 2004; Wertebroch & Skiera, 2002). The highest or second-highest bid can be chosen, dependent on the effect of the overbidding phenomenon (Kagel *et al.*, 1987; Vickrey, 1961).

### Direct versus indirect surveys

When revealed preference methods are too costly, too time-consuming, or it concerns non-material utilities, stated preference methods are an option. Methods are differentiated between direct and indirect surveys. In direct surveys the respondents are directly asked which price they are willing to pay for a specific good, service or utility. An indirect survey offers the respondent multiple products with carefully chosen corresponding prices and asks which good they would choose over the others. This is slightly similar to revealed preference experiments except for the market-like setting, which is artificial. It has to be noted that participants can overstate their WTP due to the test environment and imaginary expenses.

### Indirect surveys

One method is conjoint analysis, which is 'a technique for measuring individuals' preference structures via systematic variations of product attributes in an experimental design' (Bredert *et al.*, 2006). Respondents have to order the offers according to their preference, or rate the targeted good. Dominant variants of conjoint analyses are: full profile conjoint analysis (Green & Rao, 1971), trade-off methods (Johnson, 1974), hybrid conjoint analysis (Green *et al.*, 1981) and adaptive conjoint analysis (Johnson, 1987). The downsides are that the choice options for the respondent are always limited and respondents might not want to buy any of the offers in reality.

### Direct surveys

Other methods are based on direct surveys. Respondents are directly asked how much they are willing to pay for a certain good or non-material utility.

The expert judgement method is based on the expert's response. Advantages are that it is rather quick and low cost compared to surveying a group of customers. A disadvantage is the possible distance of the expert to the real market and its customers. Often it is used as a starting point of designing customer survey, giving an educated guess on price level. (Balderjahn, 2003; Nessim & Dodge, 1995)

The second version of direct survey is the customer survey, which is the most evident way of determining the WTP by directly asking the targeted customers. The direct approach is straight forward asking how much a customer is willing to pay for something. This has many unwanted side effects such as: an unnatural focus on price, there is no real incentive to reveal their true WTP, it doesn't automatically translate into actual buying behaviour, asking for the WTP for a complex and/or unfamiliar good is intellectually challenging, responses might be unstable due to unfamiliarity (Brown *et al.*, 1996; Marbeau, 1987; Nessim & Dodge, 1995). In attempt to collect responses that are as reliable as possible, multiple customer survey designs have been invented.

All WTP measurements are shown schematically in the tree-shaped Figure 4.



To find out what the value of non-materialistic things is, it is not possible to look into revealed preferences as there is hardly any actual data available that could provide insight. Indirect surveys are always based on giving multiple offers, which is not suitable for a situation where the WTP for conservation efforts is questioned. Participants can be asked whether they are willing to pay extra for conservation actions and to which extent or not. Therefore, direct surveys is the only, relatively low cost research method which can be used to determine the WTP for conservation efforts. As expert judgements are not applicable to this topic, the WTP can be only determined by directly asking the concerned consumers. Contingent valuation is the commonly used technique for determining the value of non-market resources (Wattage, 2001).

### 2.2.2 CONTINGENT VALUATION METHODS

Contingent valuation is based on asking the respondent directly about the WTP for non-market goods, because it cannot be compared with other goods and no historical market data is available. Straightforward asking for somebody's WTP creates methodological problems, which are shown in Table 1.

Table 1: *Problems occurring in contingent valuation methods. Adapted after Sakashita (2012).*

<b>Problems</b>	<b>Explanation</b>
<i>Hypothetical bias</i>	Values offered in hypothetical survey contexts are significantly different from values offered in real market conditions (Blumenschein <i>et al.</i> , 2001; Kennedy, 2002).
<i>Yeah-saying</i>	Yeah-saying responses refer to responding 'yes' to a question without really meaning it. (Blamey <i>et al.</i> , 1999)
<i>Non-responses</i>	Non-responses can include genuine 'don't know' responses (Dalmau-Matarrodona, 2001), which are distinct from real zero valuations.
<i>Strategic responses (protest zeros/free-riding)</i>	Respondents understand the WTP question and support the product provision but demonstrate their refusal to pay themselves by giving a nil response in the hope that someone else (e.g. government) will pay for the product (Carson <i>et al.</i> , 2001).
<i>Scope biases</i>	WTP estimates being insensitive to number size, impact size and health outcomes, e.g. minor injury versus serious injury or saving 1,000 or 100,000 birds (Borzykowski <i>et al.</i> , 2018; Pinto-Prades <i>et al.</i> , 2017)
<i>Scale bias</i>	WTP estimates being insensitive to changing health outcomes in terms of magnitude of risk reduction, e.g. 5% versus 10% reduction (Beattie, 1998; Olsen <i>et al.</i> , 2004; Hultkrantz <i>et al.</i> , 2006).
<i>Range bias</i>	The final WTP estimate restricted by the range of values presented in the Contingent Valuation survey (Donaldson <i>et al.</i> 1997, Whynes <i>et al.</i> 2004).
<i>Starting point bias</i>	The final response is influenced by the initial value presented in the bidding format (Boyle <i>et al.</i> , 1985; Silberman & Klock, 1989; Frew <i>et al.</i> , 2004).
<i>Order bias</i>	The same product is valued differently depending on the order in which the product was presented in the survey (Svensson & Johansson, 2010).

### Contingent valuation methods

Each technique needs to fit the research environment, sample size and is trying to minimize side effects of directly asking for the WTP. Table 2 shows the commonly used techniques, with explanation, advantages and limitations.



Table 2: *Contingent valuation methods with explanation, advantages and limitations. Adapted from Sakashita (2012).*

Elicitation format and example	Advantages	Limitations
<b>Open-ended question</b> "How much are you willing to pay?"	<ul style="list-style-type: none"> <li>Allows for smaller sample size than other formats.</li> <li>Simple point-estimates</li> </ul>	<ul style="list-style-type: none"> <li>Subject to non-response because it is harder than close-ended questions (e.g. yes/no questions)</li> </ul>
<b>Single-bounded dichotomous choice (referendum format)</b> "Are you willing to pay \$__?" 'yes' or 'no' vote to a single nominated value	<ul style="list-style-type: none"> <li>Simple point-estimates</li> </ul>	<ul style="list-style-type: none"> <li>Inflated mean WTP due to yeah-saying responses</li> <li>Low statistical efficiency (Hanemann <i>et al.</i> 1991, Kanninen 1995)</li> </ul>
<b>Double-bounded dichotomous choice</b> "Are you willing to pay \$x?" If yes, "Are you willing to pay \$y (with \$x < \$y)?" If no, "Are you willing to pay \$z (with \$x > \$z)?"	<ul style="list-style-type: none"> <li>Increased information on the value.</li> <li>Allow for smaller sample size than the single-bounded dichotomous choice</li> </ul>	<ul style="list-style-type: none"> <li>Inflated mean WTP due to yeah-saying responses</li> <li>Vulnerable to starting-point bias and range bias</li> </ul>
<b>Bidding format</b> Like an auction the respondents are asked whether they are willing to pay a nominated amount, and depending on their answer, they are asked about lower/higher bids. This process continues until the maximum WTP amount is found.	<ul style="list-style-type: none"> <li>Higher response rate than an open-ended question</li> <li>Closer to market situation</li> </ul>	<ul style="list-style-type: none"> <li>Inflated mean WTP due to yeah-saying responses</li> <li>Vulnerable to starting-point bias and range bias</li> <li>Requires an interactive interview format (computer programming, or telephone/face-to-face interviews)</li> </ul>
<b>Payment card</b> Showing respondents a series of values on a card and asking them to choose the value that most closely represents their WTP	<ul style="list-style-type: none"> <li>Higher response rate than an open-ended question</li> <li>More valid (higher % of variance explained; stronger association with ability to pay) than estimates derived from open-ended questions (Donaldson <i>et al.</i> 1997)</li> </ul>	<ul style="list-style-type: none"> <li>Vulnerable to range bias</li> <li>Limited interview format in order to present the payment card to the respondents</li> </ul>
<b>Payment ladders</b> Responses consist of: Absolutely certain that I would pay at least \$10 and that I would not pay \$20, but I am unsure if I would pay \$15.	<ul style="list-style-type: none"> <li>Allow for range of uncertainty over the value respondents place</li> </ul>	<ul style="list-style-type: none"> <li>Only an interval estimation between the maximum rejected bid and the maximum accepted bid can be directly obtained.</li> </ul>

The most suitable contingent valuation method is dependent on the type of investigated good and the structure of the market (Wattage, 2001).

### Bid design

The bid design used in the chosen method also has effect on the outcome. The starting bid, step size to higher or lower bids, and upper and lower limits can all effect the respondent's answers. Also, the answering scale can have an enormous effect. Dichotomous choice, giving only two options: 'yes' or 'no', is often used but can lead to yeah-saying (Blamey *et al.*, 1999), while five-point scales (or bigger) potentially lead to non-responses (Dalmau-Matarrodona, 2001). When a suitable contingent value



method is chosen, the bid design must be carefully chosen to minimize disturbance caused by the bid design (Soeteman, 2016; Veronesi, 2010).



# Methodology

## 3



*Halophila Ovalis*

### 3.1 RESEARCH LOCATION

The research reported in this thesis was conducted in the Philippines, on and around Calawit island. The island is connected by mangrove forest to Busuanga island, the northern tip of Palawan, which is the western province of the Philippines (Figure 5). The Sitio Calawit consists of three islands: Calawit, Dimipac and Maltanubong (Figure 6, repeated figure). The political embedding is as follows: Sitio Calawit is part of barangay Buluang (sub-municipality), under the authority of the Busuanga municipality. Busuanga is the most northern part of the province of Palawan, in region 4B, Luzon in the Philippines.

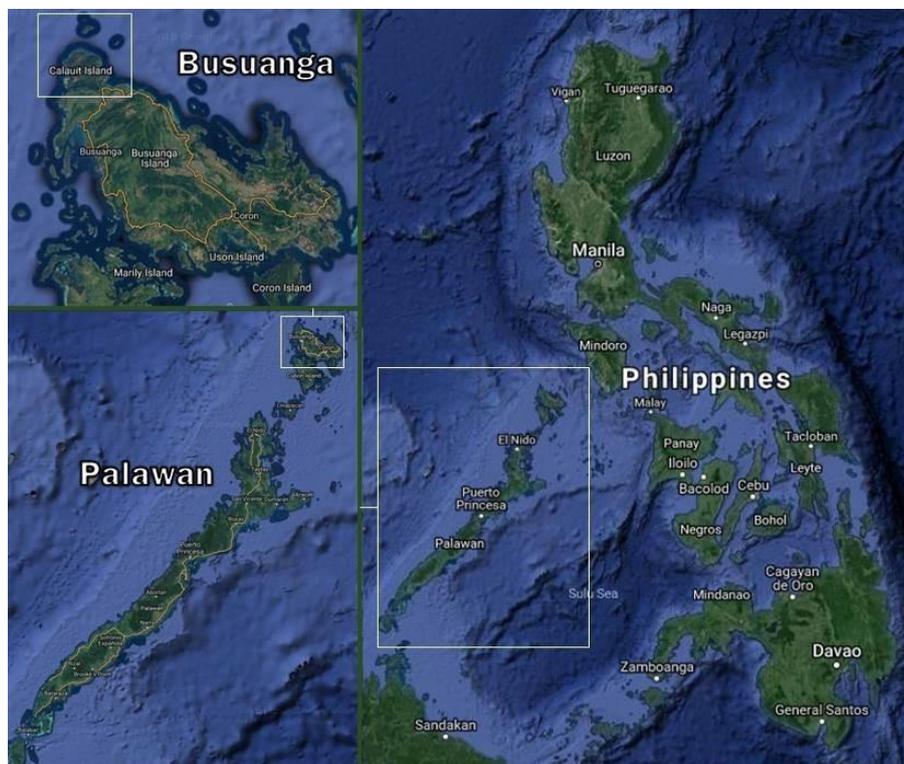


Figure 5: Map of research location: Calawit Island (top left on Busuanga Island), part of Busuanga Island, Palawan, Philippines (Google Earth, 2018).

### 3.2 DUGONG WATCHING TRIPS

Since 2017, Calawit is engaged in dugong watching tourism. In preparation for the research on ecotourism a pilot trip to Calawit was undertaken. For a short overview of the pilot trip see Box 1, details can be found in appendix B.

#### Box 1: Short overview of pilot dugong watching trip on March 9, 2018

Tour operators, mainly situated on and around Busuanga Island, arrive with their boat with tourists at a docking buoy near Calawit town. There, one or more Bantay Dugongs board the tourist boat to accompany the dugong watching trip until it returns to Calawit town. The number of Bantay Dugong on the boat is dependent on the number of tourists present, because each Bantay Dugong is allowed to supervise a maximum of eight tourists. The Bantay Dugong collects the entrance fee and makes sure all tourists fill in the registration form of the Dugong Watching Enterprise. The boat leaves for one of the three official dugong watching bays: Aban-Aban, Dimipac and Maltanubong. The boat is docked to a special dugong watching buoy (available at all dugong watching sites) and the tour operator and the bantay dugong start looking for a dugong. Once spotted, the Bantay Dugong enters the water to find it and signals that the first tourist group (maximum of four tourists) can join him and have interaction time with the dugong. All tourist groups get the opportunity to swim with the dugong separately to reduce disturbance for the dugong. After all groups are finished, everybody returns to the boat and it sets off to the next dive site. Common practice is to start with the dugong dive at Aban-Aban and do coral dives at Dimipac afterwards.





In order to observe violations of the protocol during the interaction between the dugong and the swimming tourists, it was necessary to make observations underwater. After extensive discussion with C3 Philippines and the Calawit community, it was decided that the researcher was included as a tourist. Therefore, it was only allowed to join a group of tourists in the water when the inclusion of the researcher did not cause a violation on the maximum number (four) of tourists per group guideline (20 groups). Consequently, all tourist groups consisting of four tourists could not be joined by the researcher. In all cases of a group size equal to the limit, the researcher based the violation observations by querying the Bantay Dugong on duty for his observations, as there is always a Bantay Dugong present in the water with every tourist group (19 groups).

### Bantay Dugong survey

Secondly, all accompanied Bantay Dugong were asked to fill in the Bantay Dugong survey (Appendix E) about their background, their experiences in dugong watching, history of the area and their self-confidence in explaining guidelines to tourists and correcting them in case of misconduct. Most questions were drafted with a dichotomous choice (yes/no), but always asked for explanation when the answers were confirming the question. This explanatory part had two purposes: (1) to avoid randomly answering of questions, and (2) to understand their opinions and interests better. The confidence of the Bantay Dugong was questioned in a four-point scale, 1 representing 'not confident' and 4 representing 'high confidence', due to the intuitive simple scale of low, medium and high confidence, extended with the option of 'not confident'. All open-ended questions were added to give an insight in the Bantay Dugongs' understanding of the dugong watching activities and its monitoring form. The Bantay Dugong filled in the survey only once, when they returned to the staff house in Calawit town. They were allowed to answer in Tagalog (national language of the Philippines); their responses were later translated into English by one of the C3 Philippines staff members.

### Tourist survey

Lastly, the tourists were included in the data collection. A separate tourist survey was used (Appendix F). Topics covered were: spoken languages, level of English, reason(s) why they were on the trip, knowledge on dugongs, clearness of guideline explanation by Bantay Dugong and satisfaction of the trip. The majority of the questions were closed and asking for factual information about the tourists themselves. Some open-ended additional questions were added to get a better understanding of the motivation for tourists to undertake the dugong watching trip. At the end, the tourists were asked to grade the clearness of the Bantay Dugong explanation about the rules for swimming with the dugong and to what extent they were satisfied with the trip. For both questions a five-point Likert scale was used. The majority of the surveys were filled in after the dugong interaction, due to a general lack of willingness to cooperate in the research before their first dive.

## 3.3.2 ANALYSIS

To understand to what extent the protocol was followed during the whole dugong watching trip and specifically during the dugong-tourist interaction, the observation data was analysed. Timings of the trip (activities) were compared and time-patterns were investigated, and a summary of guideline explanation quality was made. All violations that occurred were analysed and clustered. Protocol-obedient practices were also summarized.

## 3.4 CHANGE IN DUGONG BEHAVIOUR

During all accompanied dugong watching trips, data on the dugong-tourist interactions was collected by the researcher in the observation survey. Observations were made by the researcher when



allowed to join the tourist group, otherwise the Bantay Dugong on duty was questioned. Questions included the topics: describing dugong behaviour changes, the cause of the change, when it occurred and whether any action was taken by the Bantay Dugong or not.

All observations about time of interaction, group size and observed protocol violations were always noted by the researcher. Tourist behaviour under water and any violations of the protocol were noted in an open-ended question format, to have the possibility to describe situations in detail.

### 3.4.1 ANSWERING DUGONG BEHAVIOUR RELATED QUESTIONS IN SURVEY

For this part of the data collection, underwater observations were also crucial. This topic experienced the same problem with the group size limitation as with the dugong-tourist interaction violations. The researcher was not always allowed in the water and, therefore, some answers were based on observations made by the Bantay Dugong on duty.

### 3.4.2 ANALYSIS

As a change in dugong behaviour due to tourist activity is the most visual signal of unsustainable practices, all changes in behaviour were recorded. As there were only few instances in which these behavioural changes were spotted, no pattern analysis could be undertaken.

## 3.5 DUGONG WATCHING MONITORING FORMS

It is obligatory for all Bantay Dugong on duty to fill in the Dugong Watching Monitoring Form (Appendix G) for every dugong watching trip. It collects information about: date of the trip, name of tour operator, number of tourists, name of boat, weather type (sunny, rain, windy, serene, glare and clear water), moon phase and tide. Specific tourist related information is: location of dugong interaction, the recorded time of interaction with the dugong(s) per group (maximum of four people), the number of dugongs encountered, whether it was mother and calf, estimated size of the spotted dugong, dugong behaviour (eating, resting, swimming, playing, other), if avoidant behaviour occurred (swim away fast, avoid, other), change in behaviour of dugong, violations of protocol (injury to dugong, less than 5-meter distance, touching, flash photography, chasing the animal, other), actions taken (abort, fines and penalties), number of boats passing within fifty metres specified as motorized boats, peddle boats and other. The name of the reporter (Bantay Dugong) is stated and signature given.

### 3.5.1 AVAILABLE ORIGINAL DUGONG WATCHING MONITORING FORMS

All 134 Dugong Watching Monitoring Forms collected in the months December 2017, January and February 2018 were made available by the community for research purposes. All paper forms were digitalized by the secretary of the Dugong Watching Enterprise. This digitalized data, together with the original papers were used for analysis of ambiguous data gathering.

### 3.5.2 ANALYSING THE PREVIOUSLY COLLECTED FORMS

Ambiguous answers were counted per question to create an overview of necessary improvements (question specific) on the forms to avoid more ambiguous data collection.

To understand the quality of the reports, the completeness of the answers was analysed. For each question the answer given was checked on being present and completed. Answers were checked on the following topics: date, number of tourists on the boat, the tour operator, name of the boat, weather condition(s), moon phase, tide, number of spotted dugongs, location of dugong interaction, time of interaction, dugong behaviour and number of local boats passing by within fifty meters.



The content of the Dugong Watching Monitoring Forms was used to get insight in the size of the dugong watching operation. In the content analysis it was impossible to determine whether any violations occurred, actions taken, change in dugong behaviour and occurring avoidant behaviour due to incomplete forms. Therefore, this was left out in the content analysis. The other topics such as tourist numbers, active tour operators and dugong interaction locations were analysed. Results were used to construct appropriate questions in the observation survey, Bantay Dugong survey and tourist survey used in the research. In the survey for the Bantay Dugong on duty, open-ended questions were added to ask for desired improvements on the form.

### 3.5.3 AVOIDING AMBIGUOUS DATA AND NEW DRAFT

Based on the results of the analysis on the Dugong Watching Monitoring Forms of the first three months, an improved Dugong Watching Monitoring Form was drafted. All questions that showed data deficiencies in the data collection were revised and improved by reformulation, adjustments in design and/or adding answering options.

The proposed improvements on the form based on the previously collected forms covered the few mentioned desired adjustments from the Bantay Dugong (in the Bantay Dugong survey). Therefore, only one improved version of the Dugong Watching Monitoring Form was made.

### 3.5.4 INTRODUCTION OF IMPROVED DUGONG WATCHING MONITORING FORM

The improved Dugong Watching Monitoring Form draft was approved by C3 Philippines. They will introduce the new form before the end of 2018 to the community of Calawit and the Dugong Watching Enterprise. The introduction includes a verbal introduction of a new version, it needs approval from the community and a hands-on instruction to the Bantay Dugong on how to use the new form. The implementation method of C3 Philippines always includes a check on whether new forms and concepts are properly used. Therefore, scheduling the implementation is important and was not immediately executed.

## 3.6 WILLINGNESS TO PAY

To determine a tourists' WTP for a one-day dugong watching trip in Calawit, three choices have been made. First, the contingent valuation method most suitable for this research had to be determined. Secondly, an appropriate bid-design given the practical restriction of having many tourists on a boat with limited time to collect answers, had to be selected. And lastly, what other information about the tourists needed to be gathered to determine any possible correlations. The questions were based on the studies of Adamu *et al.* (2015), Neupane *et al.* (2017), Nuva *et al.* (2009) and Piriypada & Wang (2015).

### 3.6.1 FORMULATING QUESTIONS

The willingness to pay was extracted from two well-balanced questions. The first question determined the WTP for a one-day dugong watching trip. The question was repeated, with the scenario that a minimum of 10% of their paid price would be allocated to dugong conservation, to see if tourists were willing to pay more for (extra) conservation efforts for the dugongs. Due to the complexity of answering the question, no further explanation was given in the question other than the promise that a 10% share of the hypothetically paid price would directly be invested in conservation efforts.



### 3.6.2 SUITABLE CONTINGENT VALUATION METHOD AND BID DESIGN

#### The mix

There are multiple contingent valuation methods (Table 2 in 2.2.2) to determine the WTP of a non-market good. A mix between the payment card method and the payment ladder is most suitable in this case. With the payment card method, the participants pick a value displayed on separate cards. In a payment ladder the participant can respond with some uncertainty to given bid prices. The payment card method is applicable for this research because the price range of offered tours was known (see paragraph 3.7.2), it has a strong association with the ability to pay, it has a high response rate and answers are proven to be more valid than open-ended questions (Donaldson *et al.*, 1997). The payment ladder is useful, because the intervals between bid price can be made small enough such that an interval estimation of the WTP is sufficiently precise. Additionally, the payment ladder offers a range for uncertainty about the answer. The combination of the two methods: showing all bid prices in a table format to all participants at the same time, made it possible to efficiently conduct as many surveys as possible with the limited time on board of the tourist vessels.

#### Working around limitations

The payment card method requires questioning tourists face-to-face what their WTP is by showing physical cards with monetary values, but considering the time constraint and limited eagerness to cooperate in the research it was inappropriate to interview tourist individually. Asking for the WTP on paper created the opportunity to let all tourists answer the questions at the same time. The monetary values on the payment cards were turned into presented bid prices. Additionally, a practical advantage came along: a translator could join the group (always brought along with the trip by the tourists themselves, when a group of travelling tourist were unable to speak English or the local language) and translate the questions for everybody at the same time. The payment card method was adapted into presenting the monetary values in table format. To avoid 'yeah'-saying on the presented bid prices, tourists were offered more options than only 'yes' or 'no' (Blamey *et al.*, 1999). To combine this shortcoming of the payment card methods with the advantage of the payment ladder method, the survey showed the complete list of bid price at once. The participants needed to mark, in a four-point Likert scale, whether they were willing to pay the bid price for a one-day dugong watching trip. Four-point scales are ideal for labelling responses (Krosnick & Presser, 2010) and create less variance in answering (Bardo *et al.*, 1982a; Bardo *et al.*, 1986b). Labels chosen for answering if they were willing to pay a bid price for a one-day dugong watching trip were 'definitely yes', 'probably yes', 'probably not' and 'definitely not'. The outer options are clear statements and the two middle options gave participants room to express uncertainty.

### 3.6.3 BID PRICE RANGE

To know what an appropriate bid price range is to present the participants, actual offered prices of different tour operators were investigated.

#### Prior investigation

The chosen contingent valuation method presented bid prices for a one-day dugong watching trip. Seven different tour operators were contacted and asked about offered trip packages and their costs (Table 3) prior to the research.

#### Bid price scale

Based on these actual prices (Table 3), the presented bid prices ranged from PHP 2,500 (€42) to PHP 11,000 (€183). The bid prices increased with a maximum of 10% of the price, which resulted in increasing steps of PHP 250 (€4) from PHP 2,500 to PHP 5,000 and a step size of PHP 500 (€8) from PHP 5,000 and up (see Appendix F, question 22 & 23).



Table 3: Prices for dugong watching trips offered by different tour operators.

Tour operator	Price for dugong watching (PHP)	Snorkelling or diving	Minimum number of tourists	Package included:	Price for same activities without dugong watching (PHP)
<i>Safari Camp Ismael</i>	2,650 –3,650 (€44-61)	Snorkelling	4	1 snorkel site (optional 1 extra snorkel site), gear, lunch, entrance fee, transport	1,600 (€27)
<i>Palawan SandCastle</i>	3,500 – 5,000 (€58-83)	Snorkelling	2	3 snorkelling sites, gear, lunch, island hopping, entrance fee, transport	?
<i>Vicky's Guesthouse</i>	4,800 (€80)	Diving	?	2 dives, gear, lunch, entrance fee, transport	?
<i>Dugong Dive Center</i>	6,200 (€103)	Diving	5	3 dives, gear, lunch, entrance fee, transport	6,200 (€103)
<i>Club Paradise</i>	7,000 (€117)	Snorkelling	2	2/3 snorkelling sites, gear, lunch, entrance fee and transport	?
<i>Club Paradise</i>	8,500 (142)	Diving	2	3 dives, gear, lunch, entrance fee, transport	5,900 (€98) (for 2 dives)
<i>Medusa Dive Center</i>	8,590 (€143)	Diving	4	3 dives, gear, lunch, entrance fee, transport	4,600 (€77)
<i>Kiss Diving</i>	10,500 (€175)	Diving	4	2 dives, gear, lunch, entrance fee, transport	3,750 (€63)

### Limiting biases

For elaboration on contingent valuation biases see paragraph 2.2.2. Using the described bid-design, the collected answers didn't suffer from range and starting point bias because the actual offered prices were known and the bid prices were matched accordingly. By presenting the all bid prices in one table, order bias didn't have any effect. To avoid yeah-saying behaviour and non-responsiveness, a four-point scale was used. The answers collected on this question should be interpreted as a general WTP for conservation efforts, but not fixated on the amount equal to 10% of a suggested price.

### 3.6.4 ADDITIONAL IMPORTANT FACTORS

To find any correlation between WTP prices and personal determinants, tourists were asked questions about their background (Adamu *et al.*, 2015; Neupane *et al.*, 2017; Nuva *et al.*, 2009; Piriypada & Wang, 2015). Topics included: age, gender, income, demography, length of stay in Busuanga and in the Philippines, and the reason why they attend the dugong watching trip.

### 3.6.5 ANALYSIS

#### Concluding the willingness to pay prices

To be able to work with the collected data, the four-point scale answers were adjusted to an interpretable dichotomous scale. The responses on 'definitely yes' and 'probably yes' were combined



into 'yes', and the responses on 'probably not' and 'definitely not' into 'no'. This highest price marked as 'yes' was marked as the price the respondent is willing to pay for a one-day dugong watching trip excluding or including a promised 10% going to dugong conservation efforts.

### Analysis in the willingness to pay prices

At this stage, three prices per tourist were collected. The actual paid price for their one-day dugong watching trip, the price corresponding with what they were willing to pay for this same trip, and the price they were willing to pay when 10% of the price would be directly allocated to dugong conservation. For the conservation WTP, two sets were analysed: one set containing all reliable answers and the second set, as subset, was created with including a non-negative premium for conservation efforts. The non-negative premium says that it is assumed that offering conservation efforts cannot reduce the value of the trip. There is a general consensus that the making conservation efforts is better than none and, therefore, it cannot be assigned with a negative monetary value. All three prices were analysed separately and compared in pairs with three or four methods. Calculating the mean, median and the outcome of the interval midpoint analysis is applicable for every pair. The fourth method, profit maximisation is only possible when the non-negative premium for conservation efforts is considered, because negative values create pointless outcomes.

#### Mean

First is determining the mean of the prices, which can be mathematically formulated as:

$$\sum_{i=1}^N \frac{1}{N} \cdot P_i$$

where  $N$  is the number of participants in the chosen selection and  $P_i$  is the price or price-difference corresponding with the participant  $i$ .

#### Median

In this method the prices or price differences are ordered from the smallest amount to the biggest amount. The price located in the middle is the median.

#### Interval midpoint

In the analysis of the payment card method and the payment ladder method, the interval midpoint model can be used (Tian, 2011). Both contingent valuation methods indicated a price interval for the respondent's WTP. The tourist is willing to pay this price, but not the next (higher) offered bid price. In this model, the actual price the tourists are willing to pay is somewhere between these two prices. Assumed that the actual price in these intervals are normally distributed, the price in the middle of the interval is used. Which resulted in the following formula:

$$\sum_{i=1}^N \frac{1}{2N} \cdot (P_i + I_i)$$

where  $N$  and  $P_i$  are similar as in the mean model and  $I_i$  is representing half the size of the interval to next bid price. In this study the interval size varied between PHP 250 and PHP 500. Therefore,  $I_i$  is equal to PHP 125 and PHP 250, respectively.



### Profit maximisation

This model was applied on single prices and pairwise compared prices. It calculates profit or revenue maximisation based on how many participants are willing to pay a given price. Mathematically it is presented as:

$$\max_{j \in J} j \cdot T_j$$

where  $J$  is the set of all offered bid prices and  $T_j$  is the number of respondents who are willing to pay an amount equal or higher than  $j$  for the one-day dugong watching trip.

### Comparing results

Interpretation of all calculated results on single prices and pairwise compared prices was done by presenting all outcomes alongside each other.

## 3.7 ASSESSING SUSTAINABILITY

To answer the main research question, the results found with the four sub questions were combined to understand possible sustainability improvements for the Dugong Watching Enterprise. Assessing the sustainability of the researched dugong watching trips was done in two ways. First, locating the dugong watching practices in the triangle of environmental, socio-cultural and economic aspects. Secondly, the results of the current practices were used to review the overlapping characteristics of all tourism types as elaborated on in paragraph 2.1.4. These results pointed out the problems and where improvement is necessary.

Based on the results of this research, a possible implementation was inspired by Kotter's 8-step model of change (Kotter, 1996), based on an analysis of more than hundred organizations undergoing change. Every step in the model is an essential in making an effective change (Figure 7).



Figure 7: The three successive phases of Kotter's 8-step model of effective change, divided into eight steps. Reprinted from Kotter (2014).

Every step in the model focuses on necessary actions and avoiding common pitfalls (Table 4).



Table 4: For each stage of the Kotter's 8-step model of change, the necessary actions and common pitfalls are described. Reprinted from Kotter (1996)

Step	Actions	Pitfalls
<i>Establish a sense of urgency</i>	<ul style="list-style-type: none"> <li>Examine market and competitive realities for potential crises and untapped opportunities.</li> <li>Convince at least 75% of your managers that the status quo is more dangerous than the unknown.</li> </ul>	<ul style="list-style-type: none"> <li>Underestimating the difficulty of driving people from their comfort zones.</li> <li>Becoming paralyzed by risks.</li> </ul>
<i>Form a powerful guiding coalition</i>	<ul style="list-style-type: none"> <li>Assemble a group with shared commitment and enough power to lead the change effort.</li> <li>Encourage them to work as a team outside the normal hierarchy.</li> </ul>	<ul style="list-style-type: none"> <li>No prior experience in teamwork at the top.</li> <li>Relegating team leadership to an HR, quality, or strategic-planning executive rather than a senior line manager.</li> </ul>
<i>Create a vision</i>	<ul style="list-style-type: none"> <li>Create a vision to direct the change effort.</li> <li>Develop strategies for realizing that vision.</li> </ul>	<ul style="list-style-type: none"> <li>Presenting a vision that's too complicated or vague to be communicated in five minutes.</li> </ul>
<i>Communicate the vision</i>	<ul style="list-style-type: none"> <li>Use every vehicle possible to communicate the new vision and strategies for achieving it.</li> <li>Teach new behaviors by the example of the guiding coalition.</li> </ul>	<ul style="list-style-type: none"> <li>Undercommunicating the vision.</li> <li>Behaving in ways antithetical to the vision.</li> </ul>
<i>Empower others to act on the vision</i>	<ul style="list-style-type: none"> <li>Remove or alter systems or structures undermining the vision.</li> <li>Encourage risk taking and nontraditional ideas, activities, and actions.</li> </ul>	<ul style="list-style-type: none"> <li>Failing to remove powerful individuals who resist the change effort.</li> </ul>
<i>Plan for and create short-term wins</i>	<ul style="list-style-type: none"> <li>Define and engineer visible performance improvements.</li> <li>Recognize and reward employees contributing to those improvements.</li> </ul>	<ul style="list-style-type: none"> <li>Leaving short-term successes up to chance</li> <li>Failing to score successes early enough (12-24 months into the change effort)</li> </ul>
<i>Consolidate improvements and produce more change</i>	<ul style="list-style-type: none"> <li>Use increased credibility from early wins to change systems, structures, and policies undermining the vision.</li> <li>Hire, promote, and develop employees who can implement the vision.</li> <li>Reinvigorate the change process with new projects and change agents.</li> </ul>	<ul style="list-style-type: none"> <li>Declaring victory too soon—with the first performance improvement.</li> <li>Allowing resisters to convince "troops" that the war has been won.</li> </ul>
<i>Institutionalize new approaches</i>	<ul style="list-style-type: none"> <li>Articulate connections between new behaviors and corporate success.</li> <li>Create leadership development and succession plans consistent with the new approach.</li> </ul>	<ul style="list-style-type: none"> <li>Not creating new social norms and shared values consistent with changes.</li> <li>Promoting people into leadership positions who don't personify the new approach.</li> </ul>



# Results

# 4

*Syringodium isoetifolium*



## 4.1 PARTICIPANT POPULATION

The eighteen trips that were part of this research brought 14 tourists to Calawit's ancestral domain during the research period, in an attempt to see a dugong. A response rate of 90% (127 tourists) was achieved. This section gives an insight in the demographics and socio-cultural background of the respondents.

Half of the investigated trips were executed by Dugong Dive Center. This is representative for the actual number of Dugong Dive Center trips, since the data collected by the Dugong Watching Enterprise with the registration form showed that 51% of all trips during these three weeks were operated by Dugong Dive Center.

### 4.1.1 PARTICIPANT PROFILES

#### Country of origin and gender

The 127 tourists originated from seventeen different countries: China (41), Japan (19), Hong Kong (17), Philippines (12), Taiwan (10), New Zealand (7), USA (4), Saudi Arabia (3), Germany (2), Russia (2), Sweden (2), Switzerland (2), UK (2), Canada (1), France (1), Malaysia (1), Netherlands (1). The gender distribution was 63 females, 63 males and one with 'other gender'.

#### Age distribution

The youngest participant was fifteen years old and the oldest was eighty years old, with an average of 42 years ( $\pm 14.6$  SD). See Figure 8 for the age distribution of the tourists.

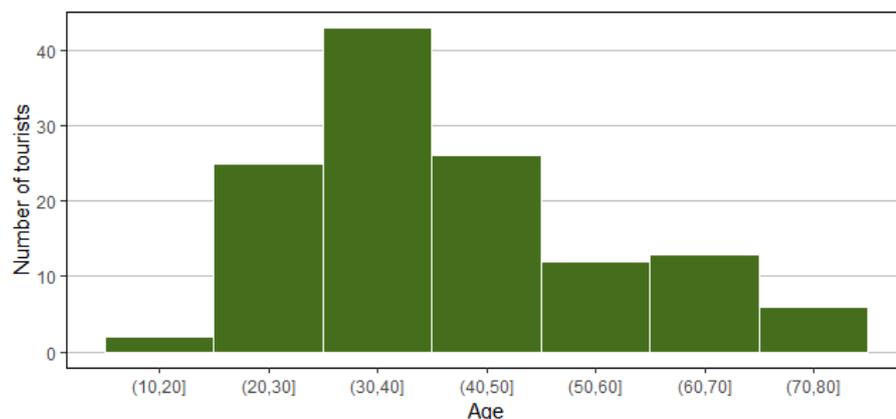


Figure 8: *The age distribution of the participating population (n=127).*

#### Education level

Of the participant population (n=127) the majority (i.e. 58%) had obtained a university degree; 20% undertook advanced studies after high school. The remaining 18% completed high school and 4% only finished elementary school.

#### Languages

Many different languages are spoken by the participants (Figure 9). Of the 127 tourists, 58 people were multilingual, with English always represented. See Figure 10 for the overlap in the seven most spoken languages.



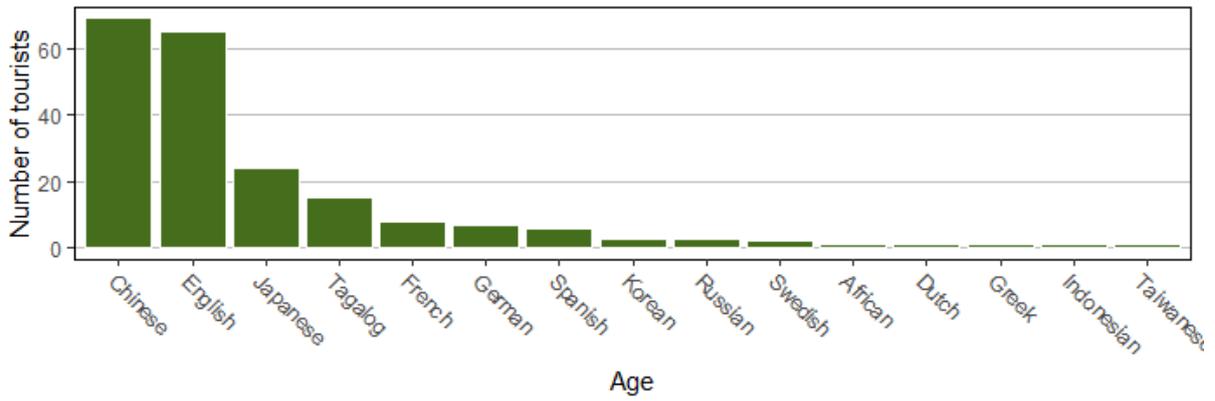


Figure 9: Languages spoken by the tourists.

If a tourist is not able to speak English or Tagalog it is extremely difficult for the Bantay Dugong and even the tour operator to explain the guidelines. Of the whole participant population (n=127), 59 people marked that they were unable to speak English or Tagalog (Filipino). These 59 people consisted of 44 Chinese and 15 Japanese citizens.

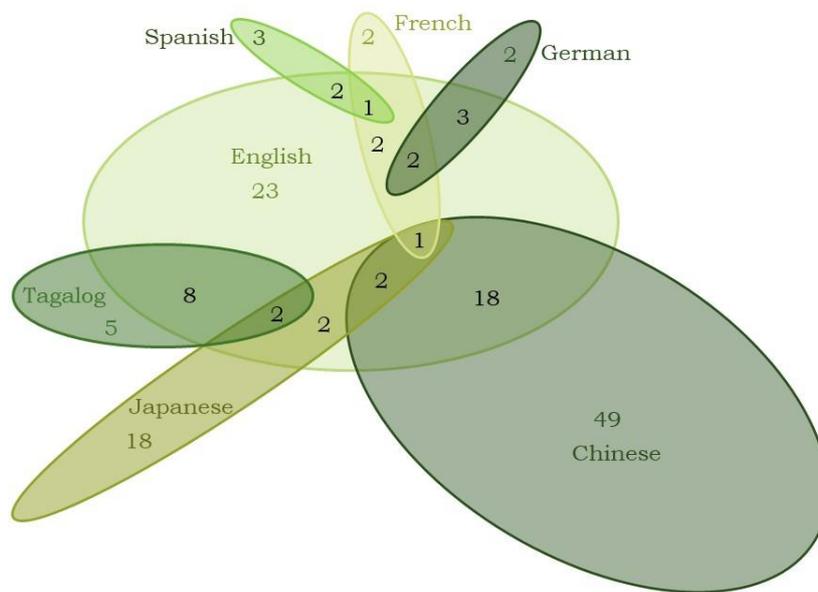


Figure 10: Venn-diagram showing overlap in seven most spoken languages, each colour representing one language. The black numbers represent tourists who speak multiple languages.

Everybody was asked to grade their level of English. Leaving out the 15 people that were able to speak Tagalog and therefore posed no problem in understanding a guideline explanation, resulted in a majority, 65%, who marked their level of English as 'Basic' (32%), 'Advanced' (13%) or 'Fluent' (22%). The remaining minority marked his/her English level as 'Only a few words' (20%) or 'Nothing' (13%).

#### 4.1.2 TOURISTS' KNOWLEDGE

Four questions about the dugong species were presented to the tourists. Of the 127 participants, 62 (49%) knew that seagrass is the dugong's only diet. Only 30 tourists (24%) were aware of the facts that dugongs can reach an age of 70 years old and that they are listed as vulnerable on a global scale.



A minority, 14 tourists (11%), knew that dugongs bear one calf every three to seven years. Most people didn't know anything (else) about the dugong. Four tourists remarked that dugongs are shy. Three people mentioned that it needs to come to the surface for breathing every few minutes (that a dugong is a mammal) and three others mentioned a relationship between manatees and dugongs, while one of them thought that a dugong is a manatee. Finally, three individuals mentioned correctly one of the following statements: dugongs exist in Australia, their size is 1.5 - 2.4 meters and they are not aggressive.

#### Knowing about dugong in Calawit

A significant share of the tourists, 39% (n=127), knew about the dugong watching trips before they came to the Philippines. Hearing about the possibility was also often done by other travellers, 27% (n=127), and finding out via internet was applicable for 22% (n=127) of the tourists, with an overlap of 6% with knowing on forehand or via other travellers. Only eleven tourists (9%) found out about the dugong watching trip at their accommodation.

#### Awareness about Community Centred Conservation (C3 Philippines)

Nobody of the surveyed tourist population knew anything about C3 Philippines. The participants were visiting one of the dugongs that C3 Philippines is actively protecting, but tourists are unaware of their conservation activities and even its existence.

#### 4.1.3 TOURISTS' SATISFACTION

The participants were highly satisfied by the dugong watching trip as their satisfaction was averaged to a 4.1 (on a Likert scale of 1 – 'not satisfied', to 5 – 'the trip was perfect, it exceeded my expectations'; n=114), representing 'the trip was great, it fulfilled my expectations'. This average rate includes the fourteen participants who attended an unsuccessful dugong watching trip, i.e. did not have an interaction with a dugong. 109 Participants (86%, n=127) would recommend the trip to a friend, relative or other, including eleven tourist who did not see a dugong. Only five tourists would not recommend it and thirteen people gave non-responses.

### 4.2 RESULTS OF OBSERVED DUGONG WATCHING PRACTICES

The dugong watching practices were partly executed according to protocol, while violations of the protocol were also observed.

#### 4.2.1 ACCORDING TO THE PROTOCOL

All dugong watching trips were accompanied by a Bantay Dugong. On every boat, the Bantay Dugong on duty made sure that all tourist filled in and signed the registration form, and that the entrance fee for all tourists was paid. Additionally, the Bantay Dugongs on duty always had the responsibility for a maximum of eight tourists, as the protocol prescribes.

All boats always docked to the dugong watching buoys present in the dugong watching areas. After dugong watching, the tourists had to swim back to the boat and were not picked up even when they surfaced at a large distance from the boat. The boats always waited in line at the docking buoy, tied up to one another as prescribed.

No illegal dugong watching sites were visited. All activities during the dugong watching trips, dugong dives and coral dives, were executed in the three dugong watching areas. During the dugong dive, a Bantay Dugong was always present near the dugong and the interacting group of tourists.

#### 4.2.2 OPENING HOURS FOR DUGONG WATCHING

Officially, the waters of Calawit are open for dugong watching from 9:00 am to 3:00 pm every day of the week, except Sundays. In practice, all boats arrived from the north/eastern side of the island and often showed up very early. They waited in the docking bay of Calawit town until the Bantay Dugong entered the boat and left for Aban-Aban bay. They had to wait at least until 8:30 am in Calawit town to not arrive in Aban-Aban too early. Most boats took up to half an hour to arrive and be docked at the dugong watching buoy. There were also some speedboats operating in dugong watching which only needed around fifteen minutes to get there. Once in Aban-Aban, the rule was: first come, first served. Therefore, tour operators were keen on being the first boat in line, especially when they had travelled for hours. For example, some boats arrived from Mindoro (an eight-hour one-way travel) and docked at Calawit town as early as 7:00 am. In the eighteen attended trips, only one boat left before 8:30 am, namely at 8:25 am. But there were three unattended trips of which the researcher observed boats leaving earlier than 8:30 am. One as early as 8:00 am.

Two of the eighteen trips docked at a dugong watching buoy in Aban-Aban before 9:00 am, namely 8:54 am and 8:55 am. All others docked after 9:00 am and before 3:00 pm. Eleven trips docked between 9:00 am and 10:00 am.

All Bantay Dugong were strict on the 3:00 pm closing time on all attended trips, even when no dugong was spotted. On the other hand, the Aban-Aban bay has a strict closing time of 3:00 pm, while the Bantay Dugong often allowed tour operators to do coral diving at Dimipac Island after 3:00 pm. Taking half an hour into account for travelling back to Calawit, the ultimate return time should be no later than 3:30 pm. Seven trips were recorded to return between 4:00 pm and 5:00 pm. None of these trips undertook dugong watching activities after 3:00 pm.

#### 4.2.3 GUIDELINES EXPLANATION

The Bantay Dugong on the boat was responsible for explaining the guidelines to the tourists. On two trips the explanation was given directly after entering the boat. Seven times it was presented after the boat docked at the buoy in the first bay. Unfortunately, on nine trips no explanation was given by the Bantay Dugong. In four of these nine cases, a short explanation was done by the tour operator. Which resulted in five trips in which tourists were completely unaware of any dugong watching guidelines.

##### Which guidelines were (not) explained

The content of the guideline explanations varied. In the nine explanations of the Bantay Dugong and four explanations given by the tour operator not all guidelines were explained. None of explanations given were complete and some guidelines were never mentioned. The unmentioned guidelines were:

- Don't cause separation of adult and calf
- No jet skis
- Speed limit applies to all vessels
- No anchoring
- Contact emergency number in case of animal stranding
- No drones
- No destruction of coral reefs and seagrass

The other guidelines were irregularly explained by the Bantay Dugong and/or tour operator (Table 5).



Table 5: Frequency of guidelines included in explanation during dugong watching trips.

Guideline	How often was the guideline explained by: <i>Bantay Dugong</i>	How often was the guideline explained by: <i>Bantay Dugong or tour operator</i>
<i>Maximum of four guests per group</i>	4 out of 9 (44%)	8 out of 13 (62%)
<i>Maintain a five-meter distance at all times</i>	7 out of 9 (78%)	11 out of 13 (85%)
<i>Observe the animal silently</i>	7 out of 9 (78%)	11 out of 13 (85%)
<i>Do not touch the animal</i>	8 out of 9 (89%)	9 out of 13 (69%)
<i>Do not chase the animal</i>	1 out of 9 (11%)	2 out of 13 (15%)
<i>Do not swim in front of the animal</i>	4 out of 9 (44%)	6 out of 13 (46%)
<i>The animal should be the one to choose to come close</i>	2 out of 9 (22%)	4 out of 13 (31%)
<i>No flash photography</i>	7 out of 9 (78%)	11 out of 13 (85%)
<i>Stop operations and abort tour when misconduct takes place</i>	4 out of 9 (44%)	4 out of 13 (31%)
<i>No throwing of trash</i>	1 out of 9 (11%)	2 out of 13 (15%)

### Confidence of the Bantay Dugong

The confidence level of the Bantay Dugong regarding the explanation of guidelines was graded at an average of 2.9 (on a Likert scale of 1 – ‘no confidence’, to 4 – ‘high confidence’; n=14). This means that they scored, on average, medium confidence (3): “I explain the rules and I will answer questions about the dugong watching trip”. For full answering scale see Appendix E. This medium confidence, however, contrasted with the field observations, as explanations were absent in half of the trips (Table 5). Moreover, it was observed in the participatory fieldwork that during the explanations there was often no room for questions from the tourists.

The Bantay Dugong graded their confidence in correcting misbehaviour of tourists higher than their confidence in explaining the guidelines. They marked their confidence level at an average of 3.2 (on a Likert scale of 1 – ‘no confidence’, to 4 – ‘high confidence’; n=14), meaning: “I correct a tourist when he/she breaks a rule”. As the researcher spotted all Bantay Dugong freediving down to the scuba divers to ‘tell’ them off or simply pulling them away from the dugong when misbehaving, this grading is likely to be accurate opposed to the grading of confidence on guideline explanations.

### Clearness of the guideline explanation according to the tourists

Tourists graded the clearness of the guideline explanation given by the Bantay Dugong with an average of 4.0 (on a Likert scale of 1 – ‘barely’, to 5 – ‘fluent’) representing: “Advanced, clear explanation of the protocol and I could ask some questions and get an answer from the ranger”. However, in most cases the explanation was given by the tour operator and, therefore, indicating that this grading is possibly not reliable under the assumption that some tourists could not distinguish the Bantay Dugong from the tour operator.

#### 4.2.4 REPEATED VIOLATIONS DURING DUGONG INTERACTION

During the interaction times between tourists and the dugong, many violations of the guidelines were observed. Sometimes the violations were individualistic actions of the tourists, while at other times the dive master (tour operator) caused the violation. In this section a summary of all observed violations is given.

#### Tourists swimming closer than five meters to the dugong

The most frequently violated guideline was ‘maintain a five-meter distance to the animal’. In fifteen groups, scuba and snorkelling activities were observed too close to the animal. In five cases the



Bantay Dugong decided to (repeatedly) do freediving down to move the tourist away from the dugong. On three other occasions the tour operator corrected the tourists. Also, two tour operators were encouraging the tourists to come closer to the animal while they were already closer than five meters from the dugong.

#### Inconsistency in maximum interaction time

While conducting the research, it was observed that a maximum limit of fifteen minutes interaction time was never adhered to. The strictest Bantay Dugongs allowed groups for twenty minutes, while others allowed even longer interaction time. Regularly, the tour operator informed the tourists that there is a maximum bottom time between 20 and 40 minutes.

#### Tourists swimming in front of the dugong

In seven groups a violation of swimming in front of the dugong was observed. This varied from swimming in front of the dugong to switching viewing sides, to stopping right in front of the dugong to take pictures with a camera. In some events even multiple tourists were at the same time too close and right in front of the dugong and consequently, blocking its way to the surface.

Another observation was that one dive master of SEA DIVE was encouraging tourists to come extremely close to the dugong (less than one meter) and stay in front of the dugong for some time.

### 4.2.5 DUGONG INTERACTION VIOLATIONS WHICH OCCURRED ONLY ONCE

#### Tour operator not listening to Bantay Dugong

In one situation, a dive master was deliberately not listening to the Bantay Dugong. This occurred on a trip executed by Dugong Dive Center. The Bantay Dugong wanted to stop the interaction time and remove tourists from the dugong due to violation of keeping the 5-meter-distance rule, but the dive master answered in hand signals that it was okay to stay longer around the dugong and that the distance to the animal was fine or taken care of by him (which was not the case).

#### More than four people in a group (snorkelers)

One time, a Bantay Dugong allowed a group size bigger than four tourists. This specific group consisted of four scuba divers and two snorkelers.

#### Flash photography

In one of the joined tourist groups, two times the use of camera flash was observed. The photos were taken right in front of an eye of the dugong from a distance of around one meter. No reaction of the Bantay Dugong was observed.

#### No fin disturbance

In all observed groups, no real fin disturbance was seen. Once, slight disturbance was spotted when the tourists had to swim a large distance to the dugong and they tried to be fast. This happened close to the boat and the boat crew was correcting the tourists' fin use.

#### Bantay Dugong outfit and equipment

During the third week of research, the outfit of the Bantay Dugong was checked. Three of the nine Bantay Dugong on duty lacked a watch. All Bantay Dugong had fins and a snorkel mask with them. Only three out of the nine Bantay Dugong wore their official Bantay Dugong shirt and six wore the Bantay Dugong cap. There was only one occasion in which a Bantay Dugong was fully equipped (watch, fins and mask) and formally dressed (Bantay Dugong shirt and cap).



#### 4.2.6 ESTIMATED REVENUES OF THE DUGONG WATCHING ENTERPRISE AND TOUR OPERATORS

There is enormous difference in revenue between the Dugong Watching Enterprise and the tour operators. As participants noted their paid price and average price per person for the seven biggest dugong watching operators was calculated and used for estimation of revenues. For other tour operators pricing data was not reliable or not collected. The Dugong Watching Enterprise collected data on the total number of visitors per tour operator on the exact data. This led to the minimum estimated revenue gained by the tour operators versus the Dugong Watching Enterprise (Figure 11), where the revenue for the Dugong Watching Enterprise is solely generated by the entrance fee.

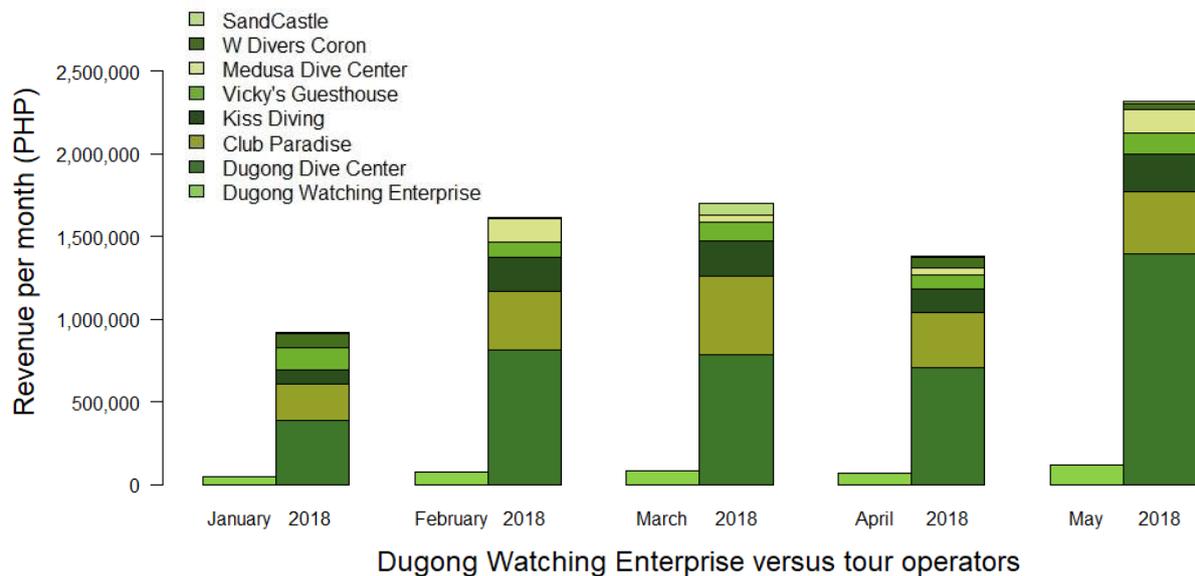


Figure 11: Estimated revenues (PHP) split per month. The left bar is representing revenue of the Dugong Watching Enterprise and the right bar represents the (stacked) seven biggest tour operators in dugong watching. For exact numbers see Appendix J.

Figure 11 shows an enormous difference in revenue between the Dugong Watching Enterprise and the tour operators. The Dugong Watching Enterprise generated a revenue equal to 2.9 - 8.6% of the revenue generated by the different tour operators. Dugong Dive Center (bottom of stacked bars in Figure 11) executed 38% of the 254 trips that took place in the first five months of 2018. On each trip, the Dugong Watching Enterprise generated a revenue equal to, approximately, 5.5% of the revenue generated by Dugong Dive Center. In each month the Dugong Watching Enterprise earned less than 5% of what the tour operators made, for exact numbers see Appendix J.

### 4.3 DUGONG BEHAVIOUR

All dugong watching trips focussed on spotting one specific dugong: Aban, who has his territory in Aban-Aban bay (Calawit Island). This dugong male of 28 years old is an excellent animal for tourist interaction as it is not shy like almost all other spotted dugongs in the area. He is very territorial and almost always present in his territory, which is suitable for the tourist trips. He didn't seem to be bothered by tourist activities around him. In most cases he seemed completely ignorant of all scuba and snorkelling activity in close proximity to him. He tolerated tourists being as close as one meter away or being surrounded by more than six people (more than the allowed four tourists, a dive



master and a Bantay Dugong). Even camera flashes, right in front of his eyes, were ignored. During all eighteen joined trips, only three times a change of behaviour due to tourist activity was observed. In all cases the dugong was closely surrounded by tourists. The dugong had trouble finding passage to the surface for breathing. Especially when tourists were swimming in front or closely above the dugong, he was forced to almost touch the tourists on his way to the surface. After such an occasion he swam away fast, moving out of his territory. The enclosures made by tourist happened regularly, only in distressing cases the dugong decided to change its behaviour. In non-distressing cases he consistently came up to the surface and swam away fast from the enclosing tourists to continue the same activity (i.e. eating, resting) in another part of the bay, often beyond the reach of the tourist group. This was observed by the Bantay Dugong and the researcher as they were faster swimmers than most scuba gear carrying tourists.

## 4.4 RESULTS FROM DUGONG WATCHING MONITORING FORMS

First, the data deficiencies were analysed and afterwards the reliable content was studied. Lastly, the improvements on the form initiated by the Bantay Dugong were inspected.

### 4.4.1 ANALYSIS ON DEFICIENCIES IN DATA COLLECTION

Below, all data deficiencies found in the available Dugong Watching Monitoring Forms are listed and elaborated upon.

#### Paper size

The first problem with the copies of the Dugong Watching Monitoring Form was the size of the report. Official paper size (F4) was used. The standard printer/copy machine in Calawit is not able to copy the whole report, as it is printed on A4. Unfortunately, the majority of the printed copies did not contain the name and signature of the Bantay Dugong who reported, which prevented an analysis of individual Bantay Dugong reporting skills.

#### Incomplete reports

Only a few reports were completely filled. This was also caused by the design, as some questions did not have a denying response option to state that the question was not applicable in the situation. For example: "Violations" was only listed as touching or chasing the dugong. Whenever there was no violation, nothing was marked for this question. For the reviewer(s) of the report it always remained unclear whether no violation occurred, or the Bantay Dugong did not answer the question.

Only half of the 134 reports, were completely filled, readable, non-ambiguous and had well noted time recordings. In all other 67 reports at least one answer was missing, unclear or could be interpreted in multiple ways.

#### Interaction time

The time of interaction between the tourists and the dugong(s) is vital for understanding the sustainability of the dugong watching practices. The question in the report could have been ambiguously interpreted. This ambiguous question led to 104 responses of interaction timing of which only 94 were in the wanted format (xx:xx am/pm until xx:xx am/pm).

#### Local boats passing by

During the analysis, it became clear that the question "number of local boats passing < 50 meters" was not understood correctly. Some Bantay Dugong reported several boats passing by, while the boat was only docked at a buoy and no dugong was sighted.



Additionally, the number of boats was often not recorded. On the report, there was space reserved to note any number, therefore, this could also be answered with a zero. Only 48 out of the 134 reports contained a recorded number of boats passing by, the others had empty spaces in response to this question.

#### Double markings

In 25 of the collected reports, two different markings of tick boxes were found. The majority consisted of a diagonal line in boxes and circles around the squared boxes. Most of the forms containing two different markings resulted in a form in which every box on the form was marked with one of the used markings.

#### Ambiguous data collection

In total, 33 reports showed ambiguous data. Examples of this were: events that no dugong was spotted but interaction time was reported, or when there were five tourists on the boat and the Bantay Dugong only reported about one group of four tourists having interaction with the dugong leaving it unclear what happened to the fifth tourist, and when the time recorded was unclear and overlap in timing suggested disobedience to the dugong watching protocol.

#### Lack of data

While there were questions about possible violations present on the form, there was no data collection on details of the violation itself. Therefore, it can never be known what happened in case of a violation.

Additionally, it was not possible to report different locations for dugong interaction on the original form while this is sometimes practiced by tour operators. The desire to include this was recognized during conversations with different Bantay Dugong and side-notes on some of the reports.

At the bottom of the report the Bantay Dugong were requested to write down their name. Often, they gave their name and provided a signature but there is no pre-set space for both. It is obligatory to sign the form by the protocol, but no designated space is made for this signature. Some forms, therefore, only showed a signature but no name.

### 4.4.2 BANTAY DUGONG REFLECTION ON THE DUGONG WATCHING MONITORING FORM

The majority of the Bantay Dugong graded the Dugong Watching Monitoring Form as easy (50%) or doable (29%) to fill in, the remaining Bantay Dugong found it difficult (21%).

Resulting from the Bantay Dugong survey, twelve of the fourteen Bantay Dugong wanted improvement of the Dugong Watching Monitoring Form. Only one person gave a specific improvement: the monitoring form should be more understandable as the English terms and questions are difficult for some people to understand.

Five people desired fewer questions, but they did not suggest specific questions that should be removed. Adding questions was unwanted by all Bantay Dugong.

### 4.4.3 CONTENT ANALYSIS OF DUGONG WATCHING MONITORING FORMS

Although a substantial part of the data in the collected forms was missing or incomplete, some data could be analysed. To get an idea about the size of the operation of the dugong watching enterprise, a number of visitor-related parameters (split per month) is shown in Table 6. The average number of tourist-swimming-groups was 1.9 per boat.



Table 6: Facts on the data collected during all dugong watching trips in the three previously recorded months, recorded by the Bantay Dugong with the Dugong Watching Monitoring Form.

	December 2017	January 2018	February 2018	Total
Number of boats/trips	46	32	44	122
Official number of swimming groups*	77	57	88	222
Number of visitors	264	179	295	738
Number of violations	6	3	2	11
Number of aborted trips	0	0	0	0
Trips without dugong encounter	6	1	2	9

\*The actual number of swimming groups was lower, as Bantay Dugong sometimes had groups of five tourists in the water because of convenience when the total number of tourists on the trip is 5, 9 or 13. This is against protocol, but was still practiced.

### Recorded violations

Out of the eleven violations reported by the Bantay Dugong prior to the research, ten violations were tourist(s) approaching the dugong closer than the allowed five meters distance. The only other reported violation concerned a group size of six tourists, which were directed back to the boat.

### Dugong encounters

The majority of the executed dugong watching trips, at least 89% (n=122), was successful in having an encounter with at least one dugong. In 102 cases one dugong was spotted, six times two dugongs were seen and in nine occasions no dugongs were spotted. About the remaining five trips the data remained unclear whether a dugong was spotted or not.

### Tourist numbers

There is large fluctuation in the number of tours and tourists per week. To show this fluctuation, the number of boats executing a dugong watching trip and the number of visiting tourists per week are shown in Table 7.

Table 7: The number of Dugong Watching boats and tourists split per week.

	Number of boats	Number of tourists	Average number of tourists per boat
WEEK 48 (2017)	8	56	7.0
WEEK 49 (2017)	17	84	4.9
WEEK 50 (2017)	6	41	6.8
WEEK 51 (2017)	3	15	5.0
WEEK 52 (2017)	12	68	5.7
WEEK 1 (2018)	5	22	4.4
WEEK 2 (2018)	5	34	6.8
WEEK 3 (2018)	8	58	7.3
WEEK 4 (2018)	12	55	4.6
WEEK 5 (2018)	7	40	5.7
WEEK 6 (2018)	16	105	6.6
WEEK 7 (2018)	20	146	7.3
<b>TOTAL</b>	<b>119</b>	<b>724</b>	<b>6.1</b>



### Location of dugong watching activities

The location for the dugong encounters was for at least 95% in Aban-Aban, perhaps even more due to absence of location data on five forms. Seven times Dimipac was the location for dugong interaction and only once Maltanubong was visited for dugong interaction. In a few cases two dugong watching locations were visited for dugong interactions.

### Tour operators

Fourteen tour operators were active in the ancestral waters of Calawit between December 2017 and February 2018. The number of trips executed by each tour operator and the number of visiting tourists, split per month, are shown in Table 8.

Table 8: The number of trips and tourists are shown per tour operator and per month.

	December		January		February		Total	
	No. of trips	No. of tourists						
<i>BBL divers</i>	0	0	0	0	1	5	1	5
<i>Camp Venedict</i>	0	0	0	0	1	3	1	3
<i>Cashew Grove</i>	0	0	0	0	1	5	1	5
<i>Club Paradise</i>	3	10	5	17	6	38	14	65
<i>Dugong Dive Center</i>	20	123	9	81	19	161	48	365
<i>Island Moment Travel</i>	0	0	1	2	0	0	1	2
<i>Kiss Diving</i>	5	35	4	21	2	16	11	72
<i>MDI divers</i>	1	6	0	0	0	0	1	6
<i>Medusa Dive Center</i>	2	10	0	0	3	18	5	28
<i>Palawan SandCastles</i>	0	0	1	2	1	5	2	7
<i>SafariCamp Ismael</i>	2	7	0	0	1	5	3	12
<i>SEA divers</i>	1	24	2	13	0	0	3	37
<i>Vicky's Guesthouse</i>	4	17	5	17	4	17	13	51
<i>W Divers Coron</i>	1	?	2	10	2	6	5	16
<i>Walk-in</i>	3	17	2	6	0	0	5	23
<b>Total</b>	<b>42</b>	<b>249</b>	<b>31</b>	<b>169</b>	<b>41</b>	<b>279</b>	<b>114</b>	<b>697</b>

## 4.5 WILLINGNESS TO PAY

### 4.5.1 DATA CLEAN-UP

Due to unexpected large variation in booked dive packages by the participants, prices for dugong watching trips varied widely. Tourists often booked multiple-day dive trips with one tour operator which posed difficulties because they did not pay solely for a one-day dugong watching trip. In multiple-day-and-dives packages, the dugong dive is just one of the dives. Additionally, there appeared to be many large travel groups which had their own travel organiser who arranged all activities. This resulted in a large number of tourists that were unaware of prices, regarding their accommodation, activities, food and dive trips. These participants were not reliable for the willingness to pay questions and, therefore, removed from the data analysis.



### Data clean-up A - pricing data

All multiple-day dive packages contained at least four dives, as multiple-day dive packages contain at least two dives per day. Therefore, all trips with one up to three dives included a one-day dugong watching trip. Tourists who booked these trips, specifically chose to come to the Calawit waters to see a dugong. For the analysis on pricing, only the 59 tourists that undertook one up to three dives were included.

### Data clean-up B - willingness to pay data

All participants who did not answer or did not know the price they paid for the dugong watching trip were left out, because it was impossible to validate whether their answers were reliable. All participants that marked the price they actually paid as 'definitely not willing to pay' in the survey were also removed, because this implied a poor understanding of the questions. And lastly, all tourists who were on a multiple-day dive trip were left out, due to difficulty in determining the price paid. Unfortunately, this resulted in a removal of the majority of participants for analysis of the WTP component. Both clean-ups resulted in a population of 43 reliable participant replies.

### Data clean-up C - willingness to pay for promised conservation data

Only the 43 participants who generated reliable data for the willingness to pay analysis were considered for the analysis on WTP for dugong conservation. Two of these refused to fill in the conservation question and, therefore, were left out in the conservation effort analysis, resulting in a population size consisting of 41 participants. Since conservation efforts are generally viewed as positive interventions and general consensus is that doing something is better for dugongs than doing nothing, paying for dugong conservation is assumed to be a non-negative premium. Adding the non-negative premium to the set created a subset of the population. This subset excluded participants who marked a higher WTP price for the dugong experience without promised conservation efforts than including conservation efforts. All analysis methods for the WTP were executed on all 41 participants and on sub selection taking the non-negative premium into account, resulting in a population size of 38 or 37 participants.

## 4.5.2 INFORMATION ON TRIPS

Results of this section are based on data clean-up A. All dugong watching trips contained at least one dive or snorkel opportunity. Three dives were the maximum number of dives done during one trip.

### What is included in dugong watching trips?

A one-day dugong watching trip included transport to the dive sites and boat use. The following was optional and dependent on the tour operator: food and drinks, snorkel and/or scuba gear rental and the number of dives included in the trip.

### Prices

The highest price paid for a complete dugong watching trip was PHP 12,000 (€200) including three swimming opportunities (snorkelling or diving), offered by Club Paradise. The cheapest trip to see a dugong costed PHP 3,000 (€50), operated by Dugong Dive Center and SEA DIVE. The average price paid for a one-day dugong watching trip was PHP 6,183 (€103), regardless of the number of dives.

Of the participant population, 14 tourists swam once, 22 tourists snorkelled or dived on two different sites and the remaining 23 visited three locations.

### Awareness about entrance fee

In the cleaned-up participant population most tourists were aware of the obligatory entrance fee, only two out of the 59 were unaware. Half of the people that were aware of the entrance fee knew that the price was PHP 300 per person. Considering all surveyed tourists: 86% (n=127) of the people



were aware of the entrance fee and 45% (n=127) of all visitors knew that the entrance fee was PHP 300 per person.

### 4.5.3 WILLINGNESS TO PAY FOR A ONE-DAY DUGONG WATCHING TRIP

This section is based on results from data after clean-up *B*. The respondents answered the WTP questions in a four-point scale. For the analysis, this scale was converted into a dichotomous scale consisting only of 'yes' versus 'no' (see 3.6.5). This conversion generated a minimal WTP price for each participant. These prices gave opportunities to use calculation methods and compare bid prices.

#### Willingness to pay for each bid price

For each bid price it was determined which percentage of the participating tourists were willing to pay this amount for a one-day dugong watching trip (Figure 12). It showed a gradual decrease in WTP when the bid prices were rising. Three clusters were recognised: a rather constant WTP for the bid price range PHP 2500 till PHP 4000, followed by a drop of around 30% for the bid price range PHP 4000 till PHP 6000, ending with a consistent decreasing percentage of the tourist population being willing to pay the increasing bid prices.

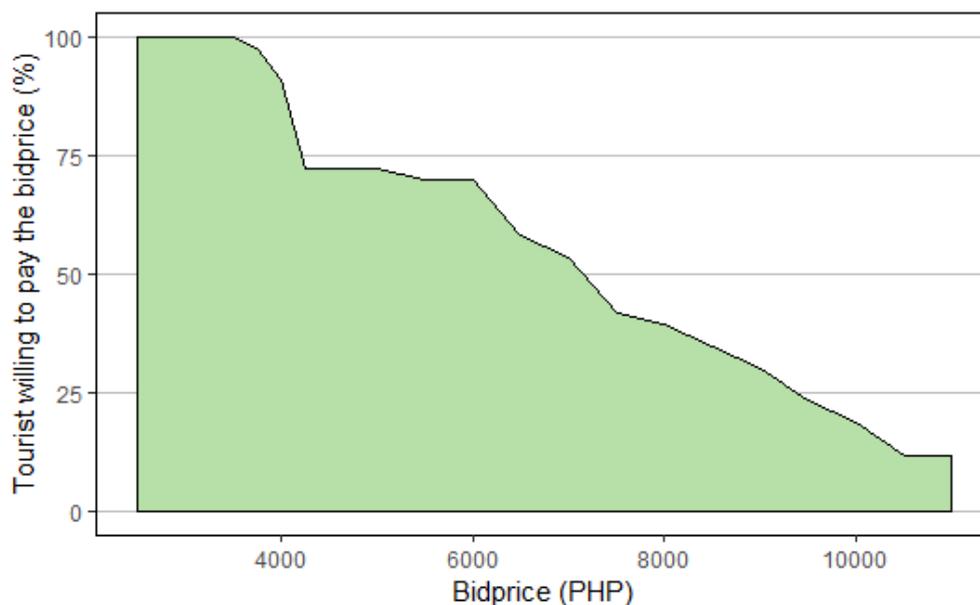


Figure 12: *The willingness to pay for a one-day dugong watching trip package expressed in percentages of the participant population who were willing to pay the given bid price.*

The four analysis methods, described in methodology section 3.6.5, were used to determine the average WTP of the participant population (row 1 in Table 9). The mean, median and interval midpoint methods resulted in similar average prices, while the profit maximisation method resulted in a significantly lower average price.

#### Comparing paid price with willingness to pay

When the actual price paid for the one-day dugong watching trip was compared with the WTP of the tourists it was remarkable to see that the majority (77%, n=43) was willing to pay more for the trip than they already did, while some (11,5%, n=43) were willing to pay the exact same price as they already paid and evenly (11,5%, n=43) marked that they were not willing to pay less than the price which they already paid (Figure 13).



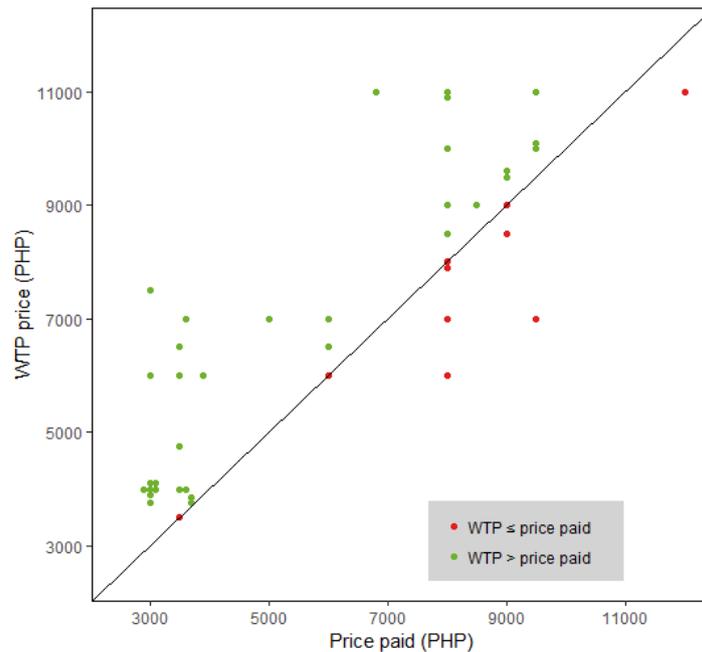


Figure 13: The willingness to pay for the same trip compared with the actual cost of the trip. Green dots mark tourists who were willing to pay more than what they paid and the red dots mark the others.

### Analysing differences

The differences between the prices paid and the prices people were willing to pay was analysed. Three of the four analysis methods were used: mean, median and interval midpoint. The profit maximisation method was not applicable because some differences were negative, resulting in meaningless numbers. The analysis methods were applied on amounts equalling the differences between the WTP price and price paid. This showed that tourists were willing to pay PHP 981 (€16) up to PHP 1167 (€19) more for their trip than they already did (row 3 in Table 9). These amounts can be interpreted as minima, because tourists who were willing to pay less than their actual price paid were included.

#### 4.5.4 WILLINGNESS TO PAY FOR PROMISED CONSERVATION EFFORTS

The results in this section were based on the population undergoing clean-up C. The WTP differed when a promise was added to the question: "at least 10% of your payment is allocated to conservation efforts for the dugongs". This resulted in a higher WTP (row 2 in Table 9).

In this case, the differences can also be analysed with the four different methods. There were three categories to compare. The marked WTP without the promised conservation actions compared with the WTP with the promised conservation efforts (Figure 14), and the actual price paid with the WTP with additional conservation actions (Figure 15).



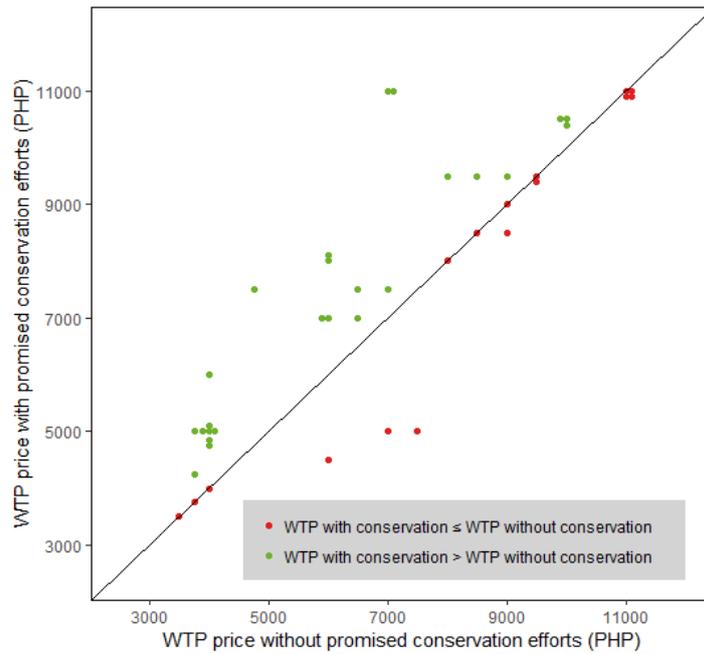


Figure 14: The WTP with promised conservation efforts is plotted against the actual price of the dugong watching trip. Green dots are showing people who were willing to pay more when dugong conservation efforts were promised, red dots represent the others.

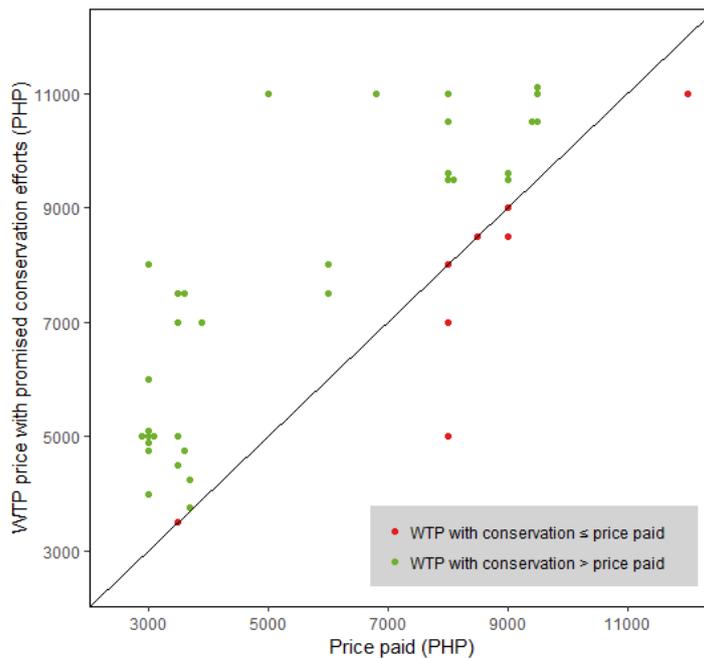


Figure 15: The willingness to pay with promised conservation efforts is plotted against the willingness to pay without promised conservation efforts. Green dots showing tourists who were willing to pay more for dugong conservation, red dots display the other tourists.



One assumption was added concerning this data set: a non-negative premium was in place. This means that conservation efforts generally are viewed as positive interventions and therefore nobody is willing to pay less for promised conservation efforts than for the same trip without the additional conservation actions. Consequently, the difference between the two stated preferences on WTP is smaller than the difference between the actual price paid and the WTP with conservation action (row 4 & 5 in Table 9).

Table 9: *The results of the four methods determining the willingness to pay for the same dugong watching trip with and without promised conservation efforts, plus results of the analysis of the differences between paid price and the two WTP prices, with and without a non-negative premium on conservation efforts.*

		Mean	Median	Interval Midpoint	Profit maximisation
1 WTP		PHP 7012 (€117)	PHP 7000 (€117)	PHP 7198 (€120)	PHP 6000 (€100)
2 WTP with promised conservation		PHP 7537 (€126)	PHP 7500 (€125)	PHP 7729 (€129)	PHP 7000 (€117)
3 Price paid vs WTP		PHP 981 (€16)	PHP 1000 (€17)	PHP 1167 (€19)	x
4 WTP vs WTP with promised conservation	All participants	PHP 621 (€10)	PHP 500 (€8)	PHP 814 (€14)	x
	Non-negative premium	PHP 865 (€14)	PHP 500 (€8)	PHP 1054 (€18)	PHP 1000 (€17)
5 Price paid vs WTP with promised conservation	All participants	PHP 1554 (€26)	PHP 1500 (€25)	PHP 1746 (€29)	x
	Non-negative premium	PHP 1870 (€31)	PHP 1500 (€25)	PHP 2063 (€34)	PHP 1500 (€25)

### Recap on interpretation of data table 9.

The average price for a one-day dugong watching trip was PHP 6183 (€103). The WTP for the same dugong watching trip ranged from PHP 6000 (€100) to PHP 7198 (€120), signifying an up to 16% higher WTP. Tourists WTP was on average PHP 981 (€16) up to PHP 1167 (€19) higher than the price they paid. When dugong conservation actions were promised the average WTP went up with at least 7%, resulting in WTP prices from PHP 7000 (€117) up to PHP 7729 (€129). When applying the non-negative premium on conservation efforts, an average tourist was willing to pay between PHP 1500 (€25) and PHP 2063 (€34) more than what they actually paid.



#### 4.5.5 ABSENCE OF CORRELATIONS

No correlations were found between the WTP versus age, education, income, residency, length of stay in Busuanga or in the Philippines. Since 19 out of the 43 (44%) participants were Chinese citizens, it was also investigated whether there was any correlation when Chinese residents were highlighted in plotted arguments, see for example Figure 16. Unfortunately, none were found (Appendix K).

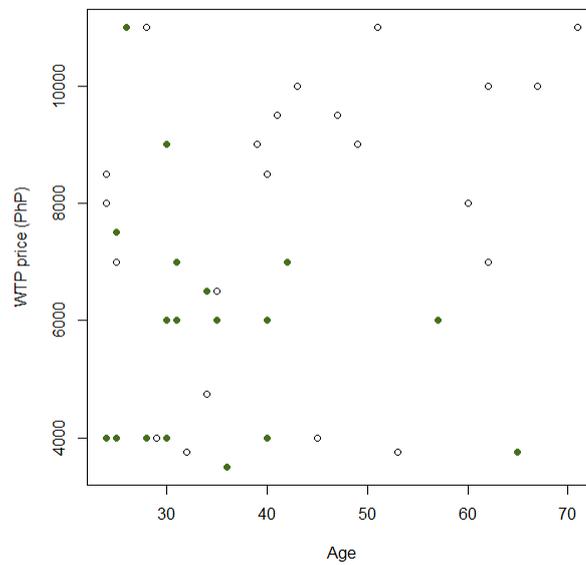


Figure 16: The age distribution plotted against the willingness to pay. The green dots represent Chinese citizens, the white dots represent tourists with another nationality.



# Discussion

# 5



*Halophila spinulosa*

## 5.1 REFLECTION ON RESEARCH

### 5.1.1 STRENGTHS OF THE RESEARCH

#### New willingness to pay measurement method

The Payment Ladder and Payment Card methods were combined in order to survey multiple tourists simultaneously. Together with the price investigation beforehand it avoided range, order and starting point bias (Table 1 in 2.2.2). The choice for a four-point scale minimised yeah-saying behaviour and non-responses (Table 1 in 2.2.2) in case of an 'don't know' option.

The newly used method to determine the WTP allowed people to fill the survey simultaneously. In large tourist groups not speaking English nor Tagalog, there was always at least one interpreter present in the group. This person was asked to voluntarily function as an interpreter such that the respondents could participate in this research. The quality of the interpreter, however, always remained unknown.

#### High and shoulder season

The research weeks were spread over two months, May in high season for the tourism industry in the Philippines and June in shoulder season. The different seasons were marked by different weather types and corresponding easiness to spot the dugong. This shoulder season had two unsuccessful trips in June. Having disappointed tourists in the data set made the responses closer to the reality as

### 5.1.2 LIMITATIONS IN FIELDWORK

#### Decisions on which dugong watching trip to join

Choosing which tour operator to join each day was more difficult than expected. It was desirable to join as many different tour operators as possible. The number of tourists per trip was an important decision factor as well, because the researcher wanted to join as many tourist groups in the water as possible with the limitation of four people per group. And lastly, it was difficult to know which tour operator would come to Calawit as they rarely made a booking in advance. Despite these difficulties, the joined trips were comparable with the actual distribution of trips over all tour operators, based on the registration by the Dugong Watching Enterprise.

#### Timing of conducting the tourist questionnaires

In the beginning, the researcher tried to motivate the tourists to fill in the survey at the start of their trip, because it was desired to know their WTP before having dugong interaction. It was noticed that tourists reacted annoyed and disinterested when approached for participation before their first dive. As a favour from the tourists was necessary, the survey was presented after the first or sometimes even after the second dive. Possibly, the WTP responses were higher because the majority interacted with the dugong successfully before participating in the research. This is also known as the endowment effect: people tend to accredit a good more when they own it (Tom, 2004). Jiang & Sood (2014) have shown that this effect is magnified when it concerns experiences rather than material products.

#### Change of practice in grouping of tourist due to researcher presence

Due to the importance for the researcher to observe the tourists in person during their dugong interaction, the researcher actively approached the dive masters on the boats to ensure the most favourable group distribution. This possibly affected the grouping of the tourists. Especially when the total number of tourists on the boat was a four-fold-plus-one: tour operators often tried to get permission to go in the water with a group of five tourists, but often denied for research purposes. It is possible that under normal circumstances the Bantay Dugong are more likely to agree to



exceeding group sizes. Therefore, the results on group sizing in this report could be more favourable than in they are practice.

#### Unexpected trip packages and group bookings

The average price paid for a dugong watching trip has been determined by directly asking the tourists what they have spent on this activity. The question was designed for a one-day package, snorkelling or diving and possibly multiple dives. Unfortunately, the researcher was unaware that many scuba diving tourists booked multiple day dive trips with one tour operator. The multiple day dive packages covered from two up to five days of diving trips, having multiple dives per day. With this booking construction, the dugong dive is just one of the many dives included in their package. Therefore, it was challenging to determine what a tourist actually paid for their trip at the Calawit waters.

#### Difficulty of tourists' willingness to pay

The questions about the WTP occasionally generated random answers as a consequence of many tourists being unaware about the price they paid for the dugong watching experience. For example, five tourists who paid PHP 8000 (€133) for their trip were definitely not willing to pay PHP 4250 (€71). Taylor (2002) also concluded that people being unaware of the actual cost of a 'good' are prevented from answering questions concerning prices in a meaningful way.

Additionally, there were many tourists travelling in groups, ranging from three to thirty people, often having their own travel organiser who was responsible for all facets of the holiday, including finances. This led to unawareness of prices paid and the Philippine currency at the tourists' end. This made it difficult to determine the reliability of the responses given. This resulted in a strict data clean-up before the willingness to pay was analysed and left only a small participant population for the analysis of this topic.

#### Focus on entrance fee instead of trip prices

Looking back at the WTP questions, they could have focussed on the entrance fee rather than the price of the whole trip. As 86% of all surveyed visitors were aware of the obligatory entrance fee and 45% of all visitors knew that the fee is PHP 300 (€5) per person. This might have resulted in more reliable answers.

#### Bantay Dugongs best behaviour

The presence of the researcher could have resulted in best behaviour practices of the Bantay Dugong. Nevertheless, results still showed many shortcomings, leaving room for significant improvements.

### 5.1.3 LIMITATIONS IN RESEARCH METHODS

#### Possible bias influences

The choice in methods for measuring the tourists' WTP offered practical advantages and limited many known biases (see 3.6.3 & 5.1.1). Nevertheless, not all biases could be prevented from influencing the answers. Hypothetical bias (Table 1 in 2.2.2) could have influenced the answers of the participants because these were clearly hypothetical questions. Strategic responses and a scope bias (Table 1 in 2.2.2) could have influenced the responses to the second question concerning the WTP for promised conservation efforts. Tourists may have the opinion that the government or other parties are responsible for funding dugong conservation, but this was not researched. And, lastly, scope bias (Table 1 in 2.2.2) could have had its effect by formulation of '10% of the price' in the survey. There is a chance that answers would be rather similar when the percentage was doubled or halved, called an anchoring effect. An anchoring effect is measured with a positive correlation to a random 'anchor' price (Sugden *et al.*, 2013), in this particular this is probably the price paid for a trip.



The percentage named in the question can cause the scope bias (Borzykowski *et al.*, 2018; Pinto-Prades *et al.*, 2017). Therefore, the '10%' should not be taken to literally and, consequently, the results can be interpreted as a general additional WTP for any promised conservation efforts.

### Confusion between tour operator and Bantay Dugong

Tourists rated the quality of the explanation of the Bantay Dugong. Sometimes, no explanation was given by the Bantay Dugong but the question answered anyway. This might indicate that tourists could not make a distinction between the boat crew of the tour operator and the Bantay Dugong.

## 5.2 DISCUSSION OF RESULTS

### 5.2.1 SUSTAINABLE DUGONG WATCHING PRACTICES?

The results of the dugong watching practices showed that the operating vessels and the boat crew were following the protocol when everybody was on board of the boat. All misconduct occurred during the tourist-dugong interaction. Dive masters and the tourists often violated the guidelines to an alarming extent, due to the numerous repetitions of being closer than five-meter distance to the dugong, exceeding the maximum interaction time and swimming in front of the dugong. The lack of guideline explanations and the mediocre quality (Table 5 in 4.2.3) of the guideline explanation were likely the cause of tourists being unaware of or not understanding the guidelines. A multiple language barrier is the major problem: Bantay Dugong weren't highly confident of their English and their explanation skills (2,9 on a scale of 1-4) and, additionally, a part of the tourists did not speak English nor Tagalog (59 out 127 tourists, 46%) which made them dependent on fellow tourist interpreters and their understanding of the guidelines. Therefore, the Bantay Dugong confidence and communication skills should be a focus point for improvement on sustainability in dugong watching.

### Intermediate recommendation

After the first two research weeks, the lack of many guideline explanations was perceived as alarming. Therefore, an urgent intermediate recommendation to the Dugong Watching Enterprise was drafted and approved by Community Centred Conservation (C3 Philippines). This recommendation letter (Appendix I) was sent to the enterprise and discussed in the following Bantay Dugong assembly. It was not yet implemented during the last week of research. Unfortunately, C3 Philippines nor the researcher was able to attend the assembly. For the follow up, C3 Philippines waited for the definitive results of this research.

### Australian Code of Practice

The dugong watching protocol is based on the *Code of Practice for the sustainable management of dugong and marine turtle tourism in Australia* (Birtles *et al.*, 2005). Compared to this *Code of Practice* (Table E), the practices observed were adhering to this code to some extent. The vessel speed was lowered when a dugong was sighted in close proximity, dugongs were not pursued by the vessel when they showed avoidance behaviour because the boats were continuously docked to a buoy, the engines were switched off when the dugong approached the boat, the tour operators assisted here presented dugong research and the dugongs were not fed, not touched nor attempted to be touched. The main difference between the *Code of Practice* and the Calawit practices lays in in-water interaction between tourists and the dugong. Swimming with the dugong is the main activity of every dugong watching trip in Calawit. Adversely, Table G in the *Code of Practice* contains only restrictions on in-water interactions with marine turtles and none on dugong interaction due to absolute restriction to enter the water at any time during dugong interaction. The majority of the recommendations made in the *Code of Practice* for sea turtle interaction were implemented in the Calawit protocol, such as no chasing and calm swimming. Unfortunately, the tourists have been



observed crowding and surrounding the dugong which caused it to change its behaviour (see 4.3). Lastly, camera flashes were observed; while it is discouraged to use camera flashes in the *Code of Practice* and even prohibited by the Calawit protocol.

### Assessing sustainability based on other research

There has been no sustainability assessment of tourism activities yet, including the impact assessment of swimming with dugongs. Possible impacts of dugong watching through disturbance and stress from tourists' interaction remain unknown (Stokes *et al.*, 2002). The closest related research is about noise disturbance for dugongs (Ando-Mizobata *et al.*, 2014; Hodgson & Marsh, 2006), with opposing conclusions. Dugongs did not show substantial effect on energy intake from passing boat traffic (Hodgson & Marsh, 2006), while the research of Ando-Mizobata *et al.* (2014) implied behavioural change for vocalisation due to boat traffic. The whale shark study of Raudino *et al.* (2016) showed that whale sharks maintained neutral behaviour in the presence of a vessel, but it changed direction more frequently. The speed of the tourist vessels is limited in the Calawit ordinance and in practice, boats lower their speed when entering the dugong watching area and, consequently, reducing noise disturbance and risk of collision with dugongs (Hodgson & Marsh, 2006).

A concerning factor in the dugong watching practices is that it centres around one single dugong, which questions the sustainability of the current practices. The wildlife watching intensity for this specific dugong is high according to Schofield *et al.* (2015). Their research indicated that "wildlife-watching activity is likely to have a stronger impact on individuals [...], rather than at the population level". The minke whale case study of Christiansen *et al.* (2013) showed a decrease in energy intake when exposed to wildlife watching activities. It is worrying for the continuity of the dugong watching activities that it is completely dependent on a single animal.

### Placing the dugong watching in the three tourism aspects triangle.

The economic, socio-cultural and environmental aspects are all represented in the dugong watching activities in Calawit, although the focus is not equally divided. The economic aspect is most prominent because the Dugong Watching Enterprise focuses on earning money with the dugong watching activities. For example, the Bantay Dugong find it difficult to go against the tour operators wishes as when tour operators did not listen to the instructions of the Bantay Dugong (see 4.2.5). Bantay Dugong find it difficult to handle unhappy tour operators and tourists, consequently they somewhat reluctant in correcting misconduct. The socio-cultural aspect is present to some extent: the dugong watching trips created a new livelihood for community members and the collected entrance fee by the Dugong Watching Enterprise could be allocated to improve living standards of the community. Unfortunately, no specific development goals are set (yet) and it remained unknown for the Bantay Dugong and C3 Philippines where the money ends up. Also, the unequal stakeholder revenue distribution needs attention, as the revenue estimations showed that the community of Calawit earns less than 5% of what tour operators made (see 4.2.6). The environmental aspect started with nature being the surrounding and purpose of the tourist activity. Caring for the environment began with the dugong watching protocol, but as the results in this research showed, the implementation of the protocol need improvement to secure the preservation of dugongs in the area. In some cases, the Bantay Dugong were somewhat reserved in explaining the guidelines and in correcting tourists due to moderate confidence and their desire to keep the tourists happy. Placing the investigated dugong watching trips in the theoretical triangle (Figure 5 in 2.1.3) ended at the edge of alternative tourism, closest to the economic aspect (Figure 17).



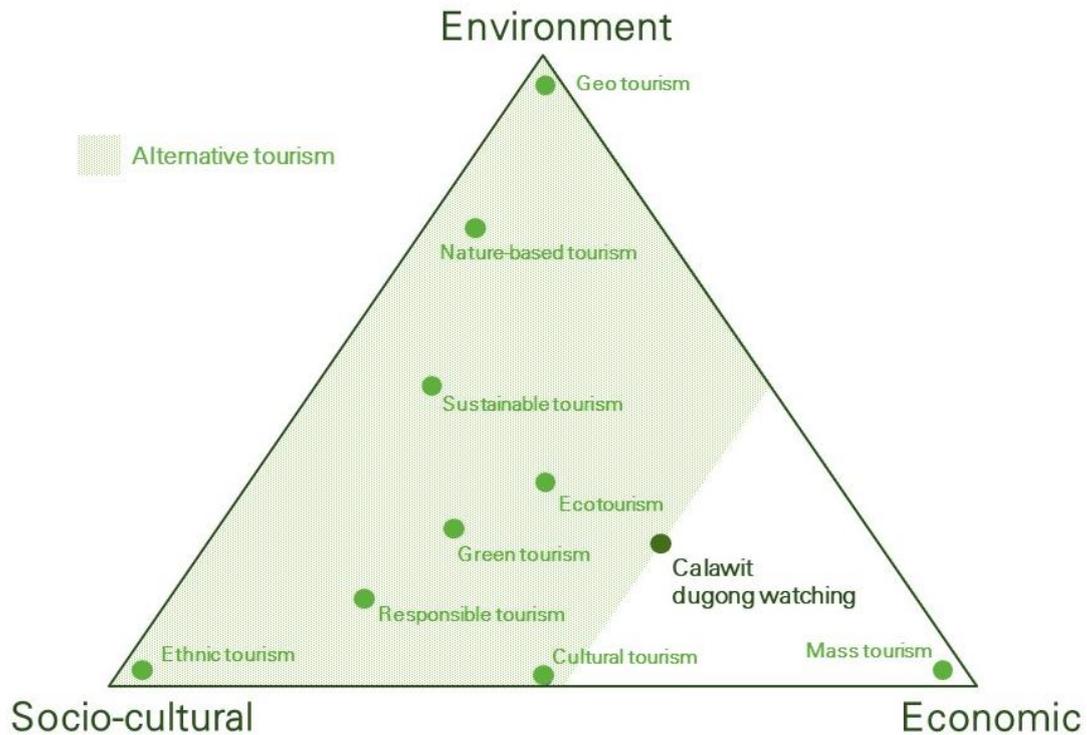


Figure 17: The dugong watching trips in Calawit placed into the theoretical triangle of the economic, socio-cultural and environmental aspects. The placement shows that the main focus is on the economic aspect of the tourist activity and the socio-cultural and environmental aspect need more attention to balance all aspects. Adjusted version of Figure 5.

The dugong watching activities are merely focused on the economic benefit and is not yet fully developed in including the socio-cultural and environmental needs and opportunities. A perfect balance, as desired in ecotourism, between all three aspects seems ideal for long-term continuation of the tourist activities. The socio-cultural aspect could be amplified by setting up a financial plan to improve living standard of the Calawit community. The environmental aspect should be enlarged by reduction of violations of the protocol with the goal to let tourists enjoy the dugong without disturbing it and starting independently executed dugong conservation efforts by the community.

#### Direct influence of this research

A Call to Action (Appendix L) was issued to the Calawit community in April 2018. Combined with the results of this research, C3 Philippines concluded that the dugong watching practices were in an alarming state, and therefore, they called for a temporary stop of all dugong watching trips. The NTCQ (the association of the Calamian indigenous community in Calawit and Quezon) temporarily closed the dugong watching domain in Calawit starting on 25 October 2018 for three months (until January 2019). All resorts were informed two months prior to the closure. The NTCQ wants to finalize the MOOP (Manual of Operational Practices) with the assistance of NCIP (National Commission on Indigenous Peoples) to secure all permits and registration before reopening the ancestral domain for dugong watching activities.

#### 5.2.2 DUGONG DISTURBANCE

Results have shown that Aban, the specific dugong, is not easily disturbed by scuba and snorkelling activities. This creates possibilities for tourists to come too close to the animal. As the *Code of Practice* (Birtles *et al.*, 2005) prescribes for sea turtle interaction, the animal should not be crowded nor surrounded by tourists. Iongh *et al.* (1997) observed that dugongs show curiosity towards divers



and snorkelers, but this was not observed in the case of Aban. The animal seemed to ignore the tourist presence to a large extent. The fleeing behaviour caused by being surrounded by tourists, possibly indicates unsustainable practice of the scuba diving interaction between tourists and the dugong. When the dugong would be repeatedly approached too closely or enclosed, the disturbance might force him to find new territory. This would cause an immediate ending of all dugong watching trips as no other dugong in the area is currently approachable for scuba diving interaction.

### 5.2.3 DUGONG WATCHING MONITORING FORM

The results showed many data deficiencies in the data collection by the Bantay Dugong with the Dugong Watching Monitoring Form (see 4.4.1). All problems can easily be solved by reformulating questions and redesigning the form. Only one of the fourteen surveyed Bantay Dugong gave one specific desired change: make the form more understandable. This implicates that there are difficulties in understanding the form.

#### Form modifications

The following modifications were suggested by the researcher and approved by C3 Philippines: (1) Resizing of the form to A4 resulting in a 2-paged form that can be printed double-sided. Therefore, it will continue to be one sheet of paper, which is convenient. (2) Adding a 'denial' response possibility for some questions solved the uncertainty on zeros and non-responses. (3) The desired interaction time format was forced by redesigning the answer-space with a prescribed format. (4) The question about local boats passing needed further clarification and was, therefore, reformulated. (5) To avoid double markings, boxes with instructions and an example were added. (6) To prevent further ambiguous data collection on group sizing and interaction locations, this information was requested to be filled in twice; once per interaction group. (7) To make the form better understandable for the Bantay Dugong, it was translated into Tagalog. An entire English version was also made for better understanding for non-Tagalog speaking staff and interns of C3 Philippines. (8) Dedicated name and signature space were created. The improved Dugong Watching Monitoring Forms was handed over to C3 Philippines for implementation; for the English version see Appendix H.

#### Comparing data collection

The data collection done with the three months of Dugong Watching Monitoring Forms resulted in the same most reported violation: tourists swimming within five meters away from the dugong. A remarkable difference, however, is that the Bantay Dugongs reported only ten violations over a period of three months, while the results of this research showed a frequency of fifteen occasions in eighteen trips. Even though the Bantay Dugongs themselves did not violate the guidelines, reporting a tourist violation can be difficult. In these situations, the Bantay Dugong was responsible for the tourist behaviour and should have interrupted the misconduct. Reporting tourist violations can therefore morally feel like self-reporting, of which the reliability was found to fairly low (Wählberg & Dorn, 2015). This might imply a reserved reporting culture amongst the Bantay Dugong.

The dugong watching location results of data gathered prior to and in this research are similar. Nearly all trips have their dugong interaction in Aban-Aban bay (95% according to the Dugong Watching Monitoring Forms and 89% observed during this research) and only a few tourists swam with a dugong at Dimipac or Maltanubong bay. Before this research was conducted, there were some concerns about possible dugong watching activities at illegal sites. This seems unlikely as the location data and conversations with Bantay Dugong did not show any sign of visits to illegal dugong watching sites, even when no dugong was spotted.



## 5.2.4 WILLINGNESS TO PAY

### The same one-day dugong watching trip

The average price paid by the tourists for a one-day dugong watching trip was PHP 6183 (€103). The WTP for the same one-day dugong watching trip was higher for 77% of the participants. The profit maximisation analysis method showed a WTP price (PHP 6000), which is almost the same as the actual price paid (PHP 6183). The three other metrics (mean, median and interval midpoint) showed substantially higher WTP prices, PHP 7000 (€117) up to PHP 7198 (€120) (see Table 9 in 4.5.4), which is an increase in price between 13% and 16%, which lies in the interval of 10-29% found in the research of Batel *et al.* (2014) on willingness to pay for marine conservation. The results of the analysis on the price differences between individual prices paid and their corresponding WTP, are PHP 981 (€16) up to PHP 1167 (€19). This shows that a significant rise in price will not stop the majority of the tourists from visiting Calawit.

The following is a discussion of the possible implementation of results. The revenue per person for the Dugong Watching Enterprise could be quadrupled, while the maximum visitor number can be halved. This would result in a doubling of revenue while reducing the visitor intensity and therefore possible impacts of the dugong watching activities by half. When the entrance fee would be increased with the lowest average difference, PHP 981 (€16), would become a fee of PHP 1281 (€21) per person. According to the averages, at least half of the visitors would be willing to pay this increased entrance fee, since the total trip price is not increased more than what the average person is WTP price.

### Willingness to pay for promised conservation efforts

When the hypothetical promise to allocate 10% of the price to dugong conservation efforts was added to the question, the WTP price raised even more for 61% (n=41) of the participants. When compared to the price paid, 80% (n=41) of the tourists were willing to pay more, which is the upper limit of 68-80% range found in other studies (Barnes *et al.*, 1999; Batel *et al.*, 2014; Bhandari & Heshmati, 2010; Han *et al.*, 2010; Piriypada & Wang, 2015). These studies concerned WTP for wildlife viewing and conservation, marine conservation, biodiversity conservation, environment conservation and coastal tourism resource protection, respectively. This resulted in WTP prices between PHP 7000 (€117) and PHP 7729 (€129) (see Table 9 in 4.5.4), with three results equal or above PHP 7500 (€125). The three metrics mean, median and interval midpoint, all showed an increase in price of 7% relative to the previously stated WTP price without promised dugong conservation efforts. The increase between WTP and WTP with promised conservation efforts is in the range of PHP 500 (€8) and PHP 1054 (€18). While the difference between the actual price paid and the WTP for promised conservation efforts lies between PHP 1500 (€25) and PHP 2063 (€34).

The results might implicate that at least half of the tourists would be willing to pay a raised entrance fee of PHP 1800 (€30), (PHP 300 + PHP 1500), under the important notion that a (minimal) fixed amount of this entrance fee is used directly for dugong conservation efforts. Using 10% (as suggested in the question) as guideline, this results in an amount of PHP 798 (€13) per person (10% of PHP 7983 (= PHP 6183 (average price) + PHP 1800 (entrance fee raise))) which needs to be allocated towards conservation efforts. Increasing the income for the Dugong Watching Enterprise with PHP 732 (€12) per tourists. An important note here is that it must be absolutely clear and transparent to the tourists that they are paying such a high entrance fee for an included conservation promise. In this particular example, 45% (PHP 798 (€14)) of the raised entrance fee of PHP 1800 (€30), needs to be spent on dugong conservation efforts. If this cannot be guaranteed, i.e. that tourists unaware of why they need to pay this high amount, it can have unfavourable effects on



visitor numbers and, consequently, negative effect on the Dugong Watching Enterprise total revenues.

#### Potential revenues and reduction in visitor numbers

Knowing that 1286 tourists visited Calawit in the high season months January until May 2018, indicates an average visitor number of 257 tourists per month. Under the assumption that half of the visitors would not be willing to pay the increased entrance fee, this results in an average of 128 tourists per month. This average visitor number would implicate a potential revenue of the Dugong Watching Enterprise of PHP 164,608 (€2743) per month in case no conservation actions are promised. And a revenue of PHP 231,300 (€3855) per month when 45% of the entrance fee is promised to be allocated to dugong conservation, equalling PHP 104,085 (€1735). In contrast with the actual revenue of PHP 77,100 (€1285) per month from January 2018 until May 2018 and with a double visitor intensity.

For the intended reopening of Calawit's ancestral domain in January 2019 to practice dugong watching activities, C3 Philippines gave inputs on pricing of the activities to the NTCQ based on the willingness to pay results of this research.

#### Absence of correlations

No correlations were found between tourists' WTP and their citizenship, age, education level or length of stay. The small participant population, due to the strict data clean-up, could be the cause of not being able to find any correlations. In other studies, different correlations were found between visitors' WTP and their personal profiles. Characteristics which have been negatively or positively related to WTP were age (Bhandari & Heshmati, 2010; Lee *et al.*, 2010; Piriapada & Wang, 2015), education level (Bhandari & Heshmati, 2010; Gelcich *et al.*, 2013; Lee *et al.*, 2010; Piriapada & Wang, 2015), gender (Batel *et al.*, 2014), and income (Bhandari & Heshmati, 2010; Piriapada & Wang, 2015). While Han *et al.* (2010) found only correlation between the level of visitors' WTP and age, education level and income. The lack of correlation is possibly caused by the small participant population (n=41,43) in the WTP analysis.

### 5.3 OTHER OBSERVATIONS

#### Camera problem

During all tourist-dugong interactions the researcher observed violating behaviour correlating with the use of amateur camera use. Due to unawareness of this issue, it was not investigated. The majority of the tourists bring camera equipment with them, from a small go pro to big fish-eye cameras, to take pictures of and with the dugong. Tourists with cameras tend to move too close to the dugong on approach, because the preview screen eliminates the sense of remaining distance people naturally have. Meanwhile, tourists without camera equipment tend to observe the animal from a natural distance. A major downside of amateur photography is that the dugong stays small on the camera screens and tourists seemed often unaware that they were approaching the dugong closer than one meter. The snorkellers and divers were seemingly completely oblivious of their actions and, consequently, disturbing the dugong by enclosing him or swimming in front of the animal. This phenomenon was also noted by Higginbottom (2004). Amateur photography poses the biggest threat for the dugongs during interactions in Calawit. This topic needs further investigation and a ban on amateur photography could be implemented, however, this will be highly unwanted by the tour operator, because it seems to be the ultimate reason for tourists to see a dugong.



### Visibility under water

Before the third research week, a small storm went past Calawit causing bad visibility for a week. At five-meter distance the dugong was not clearly visible. Tourists tend to swim closer in this scenario. Maybe, five-meter distance guideline should be adjusted to visibility at that moment with an option to cancel trip in case of bad visibility.



# Conclusions

# 6

*Thalassia hemprichii*



## 6.1 SUB RESEARCH QUESTIONS

### **To what extent is the Dugong Watching Enterprise of Calawit and its Bantay Dugong following the dugong watching protocol?**

The observed practices were largely according to protocol, except the observed tourist-dugong interaction. The interactions revealed predominantly violations of the protocol in close proximity to the dugong. All observed vessels with tourists on board were acting in line with the dugong watching protocol, such as always picking up a Bantay Dugong, paying the entrance fee and docking at buoys in designated dugong watching areas (see 4.2.1). On the contrary, when the tourists entered the water for dugong interaction a large variety in violations was observed (see 4.2.4 & 4.2.5). This was likely caused by a poor tourists' understanding of the explanation due to language barriers (see 4.1) along with the mediocre quality of, or complete lack of, guidelines explanation given by the Bantay Dugong and/or tour operator (Table 5 in 4.2.3). This quality issue or lack of Bantay Dugongs explanation is likely caused by limited confidence on the Bantay Dugongs' side (see 4.2.3).

### **What is the reaction of dugongs towards tourists that swim with them in close proximity?**

All dugong interactions were executed around the same dugong. This specific animal was usually ignorant of any tourist activity in close proximity, even when tourists almost touched him, camera flashes were used and when tourists were swimming right in front of him. During the interaction with three groups of the 39, the dugong showed fleeing behaviour. In all three cases this was caused by tourists enclosing the animal (see 4.3). The consequence of this dugong fleeing behaviour remains unknown, because no research has been conducted (yet) on the short and long-term effects.

### **How can the 'Dugong Watching Monitoring Form', filled in by the Bantay Dugong, be improved such that no ambiguous data is collected?**

All causes of unclear and ambiguous data gathering, such as incompleteness of the report, wrong interaction time notations, misunderstanding of counting boats passing by, use of double markings and non-responses (see 5.2.3) were easily deducted in an improved version of the Dugong Watching Monitoring Form (see Appendix H). This was handed over to Community Centred Conservation (C3 Philippines) for implementation.

### **How high is the willingness to pay by tourists to join a dugong watching trip?**

Tourists' WTP for the same one-day dugong watching trip is up to 16% higher than the price paid. The average price paid was PHP 6183 (€103) with 77% (n=43) of the participants willing to pay more. Averages of the WTP prices ranged from PHP 6000 (€100) to PHP 7198 (€120). When a promise of '10% of the price would be allocated towards dugong conservation actions' was added, 80% (n=41) of the participants were willing to pay even more. The average WTP prices raised with at least 7%, resulting in WTP prices ranging from PHP 7000 (€117) and PHP 7729 (€129) (Table 9 in 4.5.4).

## 6.2 MAIN RESEARCH QUESTION

### **What could be improved in the current practices of the dugong watching trips to make these more sustainable and at the same time stay (financially) attractive for both the tourists and the Calawit community?**

The confidence levels of Bantay Dugong should be increased, to have more reliable and qualitative guideline explanations to visitors. This will likely lead to a necessary reduction in guideline violations during tourist-dugong interactions to minimise disturbance for the single dugong concerned with all dugong watching activities. Furthermore, the results of the WTP exercise showed available financial space to raise the entrance fee, while still attracting many visitors. Through a more substantial raise of the entrance fee, the revenues for the Calawit community can increase substantially, while the tourist intensity and hence the pressure on the dugongs will decrease.



# Recommendations

7



*Cymodocea rotunda*

## 7.1 RECOMMENDATIONS FOR COMMUNITY CENTRED CONSERVATION (C3 PHILIPPINES)

Dugong disturbance is previously only researched in relation with vessel actions and vessel noise (Anderson, 1981; Birtles *et al.*, 2005). No research has been conducted on the relation between dugong disturbance and in-water snorkel or scuba tourist activities. Therefore, the short-term and long-term consequences of the close dugong interactions practiced in Calawit remain unknown. Rising tourist levels should be carefully managed, as the dugong already showed fleeing behaviour on three occasions and serious disturbance from feeding can be dangerous for the animal (Anderson, 1981). But the financial attractiveness of increasing visitor numbers for the Calawit community needs to be considered. Prohibiting in-water interaction is expected to drastically reduce visitor numbers and possibly antagonise tour operators, as the interaction with the dugong is their main selling point.

Amateur photography should be prohibited or regulated as tourists used camera flashes and tend to only focus on their camera screen and are, consequently, oblivious of being too close to the dugong and unintentionally violating guidelines.

There is confusion on the allowed interaction time with the dugong between all involved parties: C3 Philippines, the Bantay Dugongs and the tour operators. So far, no research has been conducted on the duration of marine megafauna encounters and the effect on animals involved. No set guidelines can be followed, but it is desired that all stakeholders work with the same duration to avoid confusion, and potentially, disagreements between stakeholders. When the maximum duration of dugong interaction is set, this could be added to the dugong watching guidelines.

The results of this research showed that there is substantial financial room to increase the entrance fee resulting in a desired reduction of visitor intensity, while keeping it financially attractive for the Calawit community. A possible implementation inspired by Kotter's 8-step model for effective change could involve:

- 1. Establishing a sense of urgency.**

Create urgency amongst primary stakeholders based on the outcomes of this thesis.

- 2. Creating the guiding coalition**

Form a strong coalition between C3 Philippines, the Calawit community and its Dugong Watching Enterprise to make the necessary changes.

- 3. Developing a vision and strategy**

Reduce dugong disturbance by lowering visitor numbers, and improve the sustainability of tourist-dugong interactions by supplying better guideline explanations, while increasing the Dugong Watching Enterprise revenue. Focus points:

- There are two opportunities to increase the quality and frequency of guideline explanations with the purpose of avoiding violations instead of correcting them. First, provide confidence training(s) for Bantay Dugong. Secondly, supply the official dugong watching guidelines translated to Chinese and Japanese, plastered on, for tourists who are not capable of understanding Tagalog and English.
- Increase the entrance fee and consequently generate the same or higher revenue for the Dugong Watching Enterprise, whilst discouraging some visitors. Raising the entrance fee by the lowest average price difference (by metrics median and profit maximisation) between the price paid and tourists' WTP with promised conservation efforts (PHP 1500 (€25)) is expected to withhold half of the visitors (row 5 in Table 9). This raise entails a six-fold increase on the original entrance fee (PHP 300 (€5)). Resulting in a tripling of the Dugong Watching Enterprise revenues despite halving



the number of tourists (see 5.2.4). Fewer visitors entails a reduction in the chance on (irreversible) dugong disturbance and, therefore, increased sustainability of the dugong watching trips. As a consequence of visitor reduction, the Bantay Dugong job opportunities will decline. To keep providing this new livelihood for community members, the salary of the Bantay Dugong should be raised to compensate for the decline in trip frequencies. This salary raise can, additionally, be used to create greater incentives to improve their confidence with trainings.

- A fixed percentage, at least 45% (see 5.2.4), of the new entrance fee should be designated for dugong conservation efforts. With this agreement, the Calawit community can start its own dugong conservation actions and work independently as their funds are generated directly by the tourists.

#### **4. Communicating the change vision**

Communicate plans to the Bantay Dugong and the tour operators. For both parties it is important to understand that the dugong watching trips need improvement in sustainability for the continuation of all dugong watching activities.

#### **5. Empowering broad-based action**

Obstacles are expected to be present in the community and tour operators. The community needs to understand that the current fee can be significantly raised without visitor numbers dropping heavily. The tour operators shall find it slightly harder to sell the dugong watching trip as the entrance fee is raised, but they should embrace the uniqueness of the dugong and that diving with a dugong is not just another dive, but is an exclusive and unique experience.

#### **6. Generating short term wins**

C3 Philippines suspects that the community will react in very reserved way to a substantial raise in entrance fee, because the current fee is equal to a minimum day wage in Busuanga. Prior to the research, they have expressed to C3 Philippines that a substantial raise in entrance fee might prevent the majority of tourists from visiting their ancestral domain. The entrance fee could be raised in two or more gradual monetary steps. For example: starting with raising the entrance fee from PHP 300 (€5) to PHP 1050 (€18) and later to PHP 1800 (€30). Starting with a smaller raise might be more acceptable for the community and it will provide a quick win in increased revenue for the Dugong Watching Enterprise while the visitor intensity remains the same. This could prove to the community that tourists are willing to pay significantly more than what they currently pay. Furthermore, a budget for additional conservation actions can be launched.

#### **7. Consolidating gains and producing more change**

A smaller increase in entrance fee could show the community that the vast majority of tourists will continue visiting the area. This will promote and prove that there is more room for increasing the entrance fee. The start of their autonomous dugong conservation actions could motivate them to be more independent. Achievements can and should be celebrated in the community and amongst other stakeholders.

#### **8. Anchoring new approaches in the culture**

C3 Philippines can point out the improvement in sustainability of the dugong watching practices as a result of independent conservation actions. This can attract more conservation- and/or nature-loving tourists, creating a chance of repeating the above described process: increasing entrance fee, reducing tourist number, increasing the exclusiveness of the dugong and enhance more dugong conservation actions.



## 7.2 RECOMMENDATIONS FOR CALAWIT COMMUNITY

A large improvement in Bantay Dugong confidence is necessary to secure the sustainability of the tourist-dugong interactions and, therefore, continuation of the dugong watching trips. The confidence issue concerns the level of English spoken by the Bantay Dugong and the courage to speak in front of a group of (foreign) tourists. To facilitate tourists who are unable to speak Tagalog and English, the dugong watching guidelines could be translated to Chinese and Japanese. These translated guidelines could be plastered on and taken on board of the tourist vessels with the Bantay Dugong.

Raise the entrance fee sufficiently to create more revenue for the community and a dedicated dugong conservation budget, while reducing the tourist number to minimize disturbance for the dugong. When tourist numbers drop, job opportunities for the Bantay Dugong will drop simultaneously. To keep offering a viable livelihood for community members, the salary of the Bantay Dugong has to be increased accordingly.

Cooperate closely with C3 Philippines to establish an effective dugong conservation action plan, funded by a percentage of the received entrance fees.

## 7.3 RECOMMENDATIONS FOR FURTHER RESEARCH

To determine the effects of the implementation of a higher entrance fee, such as whether tourist numbers dropped, how the conservation fund (financed by a part of the entrance) is used and how it affected the community, this research could be repeated. Likewise, it could be determined whether an improved dugong watching protocol and improved explanation leads to a reduction of violations.

Further research should be conducted on the short-term and long-term effects of tourist activities in close proximity to the dugong, and if the fleeing behaviour shown by the dugong has (permanent) negative effects on its health and future perspective. Also, deeper investigation of the exact factors that cause the dugong to change behaviour or flee its territory can be vital in sustainable tourism practices. When the dugong-tourist relation is better understood, the dugong watching protocol could be adapted accordingly to minimize dugong disturbing tourist' behaviour.

There has been no research conducted on the relationship between the duration of marine megafauna in-water interactions with tourists and the effects on the animals' health, behaviour or habits. Investigating what constitutes an (un)sustainable duration of these interactions is possibly applicable on all kinds of marine megafauna focussed tourist activities.

The developed willingness to pay methods, used in this research, can repeatedly be used for similar research on other marine animals which are approachable for (in-water) tourist activities. Large sized animals such as whales, sharks, sea turtles, dolphins and rays can be compared for tourists' willingness to pay and, therefore, possibly analysed in their financial value. Megafauna species have the benefit of being a focus point or reason for a desired marine wildlife watching experience, while smaller species are rarely sought upon independently.

Many violations of the five-meter-distance rule were observed. It could be investigated whether this distance could be increased or reduced, corresponding with the visibility under water as it changes due to weather impacts.

Besides the useful results found in this research, amateur photography appeared to be one of the main causes of protocol violations in close proximity to the dugong. Due to unawareness of this issue, it was not covered in this research but should be investigated. Additional research should be



conducted assessing the impact of amateur camera use, determination of the quantity of camera using tourists and an analysis of supporting options for prohibition of amateur camera use. Supporting options could for example be: allowing locals to obtain a job as photographer or train dive masters who can join the tourist groups, and who can photograph the tourists and the dugong together. The gear could be funded by C3 Philippines or the independent dugong conservation fund of the Calawit community. This idea has many practical complications such as the group size limit, availability of local photographers, and the tourists' willingness to pay additional fees to have a professional photographer accompany their trip.



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## APPENDICES

- Appendix A. Community Centred Conservation
- Appendix B. Pilot dugong watching trip
- Appendix C. Dugong watching protocol
- Appendix D. Observer survey
- Appendix E. Bantay Dugong survey
- Appendix F. Tourist survey
- Appendix G. Original Dugong Watching Monitoring Form
- Appendix H. Improved Dugong Watching Monitoring Form
- Appendix I. Intermediate recommendation to Dugong Watching Enterprise
- Appendix J. Estimated revenues
- Appendix K. Absence of correlations
- Appendix L. Call to Action

## APPENDIX A. COMMUNITY CENTRED CONSERVATION (C3 PHILIPPINES)

Community Centred Conservation (C3 Philippines) (Community Centred Conservation, 2018), was founded by Patricia Davis in 2002 in Palau. The foundation puts effort in the field of marine conservation in the Philippine seas.

### Three locations

Community Centred Conservation is active in Fiji, Madagascar and the Philippines. In Fiji it focuses on local community involvement with general marine conservation of coral reefs and other marine flora and fauna by building schools for the young generation with implemented conservation education. Topics are coastal erosion and vulnerability of marine species, such as the Humphead wrasse (*Cheilinus undulatus*, Rüppell). In Madagascar, Community Centred Conservation focuses on dugongs and sea turtles. It also engages with local communities to inform them about (destructive) fishing techniques, improving position of local communities with conservation and tourism.

### C3 Philippines

The Philippines branch of C3 Philippines focuses primarily on the conservation of dugongs and sea turtles but is increasingly becoming an all-round conservation organization, with new focuses on indigenous tree planting, mangrove conservation and informing local people about negative effects of garbage in nature. Its approach is to educate and engage with local communities on the importance of marine biodiversity and specifically dugongs, raising awareness in all communities on Busuanga (Palawan, Philippines) and teaching fishermen and their children an eco-friendlier way of fishing, while at the same time learning from their knowledge about the seas as their life-long jobs as fishermen. C3 Philippines is mapping seagrass, does simultaneous dugong monitoring, involves the local community of Calawit (Northern Busuanga) in dugong sightings, protecting and planting mangroves, call for more indigenous trees on the island and advises the local community of Calawit Island on sustainable tourism practices.

### The C3Philippines team

The founder of C3 Philippines is Patricia Davis. She is managing all three C3 Philippines locations. In the Philippines, Reynante Ramilo is the manager over all C3 Philippines activities. He is located in Manila (capital of the Philippines) and comes to visit the field office one week per one or two months. He is in charge of the fundraising, which is the main reason for him being located in Manila.

In the field office in Salvacion, Ginelle is the senior officer and is the local manager who is responsible for decision making and reporting to Reynante Ramilo. Next to her is Shalom, the financial officer of C3 Philippines. To facilitate to discussions and negotiations with the local community in Sitio Calawit, C3 Philippines hires a liaison officer Sander, who part of the Calawit community and lives in Calawit proper. He is capable of talking in Tagalog (Philippine national language), Cuyonin and Tagbanua (Dialects spoken in Sitio Calawit). Additionally, Chewa and Helbert are junior field officers who execute most field work such as organizing events, doing resource mapping, keeping contact with other local communities in the many different projects.

### Conservation efforts on Dugong Protection Areas

C3 Philippines is working on different aspects to get official declaration of important areas, to be dugong protections areas. The first aspect is the training of sixty Bantay Dugong volunteers to continuously monitor dugong sightings and protection in the municipality of Busuanga. Secondly, C3 Philippines is organising simultaneous monitoring events in Sitio Calawit to get a better understanding about the dugong population and distribution around the island. So far, there have been two events, June 2017 and May 2018. The next one is scheduled in November 2018, also to see if there is a change in sighting when the weather conditions are different, dry season versus rain

season. C3 Philippines is aiming to conduct more research on dugong populations and seagrass habitats around Busuanga Island and potentially other areas in the Philippines in the future.

And the most important aspect is the cooperation with the indigenous people of Calawit. Recently, in May 2018, the community passed a resolution declaring ten (suggested) sites of dugong conservation area around Calawit Island. All in all, it took C3 Philippines two years from the first step of finding important areas up till the approval of the indigenous community to allow an official conservation status on some parts of their ancestral waters. The next step for C3 Philippines is to present all data and resolutions from the community to the government, for an official declaration of dugong conservation areas in Calawit. C3 Philippines has even bigger plans, they want to present all data and resolutions from the community to DENR and PCSD to get a national declaration of Busuanga Island as critical habitat for the dugongs.

As a follow up of the Calawit protection areas, C3 Philippines want to replicate the experience gained in Calawit for other Barangays in Busuanga to declare more dugong conservation areas through Barangay resolutions. And they want to lobby to the municipal government of Busuanga to pass a resolution on dugong conservation area in Busuanga.

### *Research location*

The research location, in the Philippines, is one of the last hotspots for dugongs around the world. The field office of C3 Philippines is located in Salvacion, Busuanga, Palawan, Philippines. The town Salvacion gives access to reasonable telecommunication networks and internet connection, which are barely available in Sitio Calawit where the main research took place. The research area is about an hour motorcycle ride and a five-minute boat ride from Salvacion. Calawit proper (capital of Sitio Calawit) is the main entrance to the waters of Sitio Calawit. C3 Philippines works closely together with the local community, as the name of C3 Philippines suggests, living on the islands Sitio Calawit. All conservation efforts executed by C3 Philippines are first discussed and approved by the local community.

## APPENDIX B. PILOT DUGONG WATCHING TRIP

A pilot trip was used to have an overview of general practices of the dugong watching trip. The researcher joined a dugong watching trip offered by Club Paradise on March 9<sup>th</sup>, 2018. The boat from the resort sailed into the docking zone of Calawit around 09:00 hours. A Bantay Dugong is brought, by rowing boat, to the tourist boat and collects the entrance fee from all tourists. In this particular case Jimmel Novero, manager of all Bantay Dugong, joined the trip. The tour operator payed the obligatory entrance fee of PHP 300 (€5) for every tourist on the trip (is already included in the package price for the tourists) to visit the water of Calawit. The boat travelled to one of the three official dugong watching areas: Aban-Aban, Dimipac and Maltanubong. This specific trip, the boat went to Aban-Aban. There is a docking buoy present in the bay and all tourist boats waited in line, tied together with engine off, until their group(s) of tourists were the first in line to enter the water. On this particular day, the maximum number of boats in line was three. Just after boat was docked, the Bantay Dugong shortly explained in English the protocol about how to behave around dugongs. When a dugong is spotted and the boat is the first in line, a tour guide (from the resort), the Bantay Dugong on duty and a maximum of four tourists enter the water and swim around the bay in search of the dugong. When a dugong is in sightings-distance of the tourists, they timed twenty-five minutes interaction with the dugong. After this timeframe the group swims back to the boat and another tourist group enters the water. That day, the boat docked as second boat at 09:15 hrs and left Aban-Aban at 11:55 hrs. The first group was in the water from 10:30 until 11:00 hrs and had dugong interaction between 10:35 and 10:55 hrs. The second group was in the water between 11:00 and 11:45 hrs and had dugong interaction from approximately 11:20 until approximately 11:40 hrs.

Some tours add additional water events such as swimming above coral in other parts of the sea, after or before the dugong interaction. When all tourists have swum with the dugong, the boat leaves the docking buoy (which gives opportunity for the next boat in line) and travels to another area for additional activities. During the pilot trip the boat went to Dimipac Island after the dugong dive, where the tourists had their lunch on the beach and afterwards snorkelled above the coral reef close to shore while following the tour operator back to the boat. At the end of the trip at approximately 14:00 hrs, official closing time is 15:00 hrs, the Bantay Dugong was brought back to the docking area at Calawit.

# DUGONG WATCHING GUIDELINES



**ONLY FOUR (4)** guests will be allowed in the water with the animal/s at any time (regardless if they are using SCUBA or snorkel)



Maintain a **FIVE (5) METER** distance at all times from the animal



Observe the animal **SILENTLY**, with no noise (e.g. calm fin use, no jumping from the boat, no talking in the water)



THE ANIMAL/S SHOULD BE THE ONE TO **CHOOSE** to come close or not, this is not the decision of the guides or tourists



**DO NOT CHASE** the animal/s. If the animal displays avoidant and/or distressed behaviors such as trying to swim away, stop swimming and chasing the animal



**DO NOT TOUCH** the animal/s



**DO NOT SWIM IN FRONT** OF THE ANIMAL, do not intercept the animal/s, especially if they are on their way to the surface



Guides and tourists **MUST NOT CAUSE OR ACT** in any manner that may cause an adult dugong and calf to **BECOME SEPARATED**, or individuals to be separated from the herd



In the event of any misconduct that may cause harm, injury or death to the animal/s, immediately **CONTACT TRAINED MARINE MAMMAL STRANDING RESPONDERS FROM CALAWIT AND/OR C3 PHILIPPINES**



**OTHER PERTINENT RULES AND REGULATIONS FOR ACTIVITIES WITHIN THE CADT AREA:**

**NO DRONES** ARE ALLOWED IN THE CADT AREA WITHOUT PERMISSION

**NO ANCHORING** BY BOATS (BOAT MOORINGS WILL BE MADE AVAILABLE)

**NO THROWING OF TRASH** AT ALL TIMES

**NO DESTRUCTION** OF CORAL REEFS AND SEAGRASS



# Dugong watching research

May & June 2018

**RESEARCHER: IRIS VAN VEGHEL**

1. Date of Dugong Watching trip: .....
2. Time of entering the Dugong Watching boat: \_\_ : \_\_ hrs
3. How many tourists are joining the dugong watching trip? .....
4. Which company is operating the trip? .....
5. How many employees of the tour operators are present on the boat? .....
6. When does the Bantay Dugong explain the protocol rules?
  - o When entering the boat
  - o When entering first dugong watching area
  - o After boat is docked at buoy
  - o Just before tourist enter the water
  - o No explanation
  - o Other: ..........
7. The Bantay Dugong explained the following rules of the guidelines:  
 a     b     c     d     e     f     g     h  
 i     j     k     l     m     n  
Other pertinent rules and regulations for activities:  
 a     b     c     d
8. Level of English spoken by Bantay Dugong:

1    2    3    4    5

- 1 = barely, impossible to understand explanation of protocol
- 2 = not sufficient, no clear explanation of protocol
- 3 = basic, just enough for explaining the protocol clearly
- 4 = advanced, clear explanation of the protocol and could answer some questions of the tourists
- 5 = fluent

**9.** The tourist follows the orders of the Bantay Dugong (and tour operator) on the boat?

- Always
- Very often
- Sometimes
- Rarely
- Never

Orders that were not followed are:

.....  
.....  
.....

**10.** Does the tourist obey the protocol rules on the boat?

- Always
- Very often
- Sometimes
- Rarely
- Never

Rules that were not obeyed are:

.....  
.....  
.....

**11.** Which equipment used by tourists in the water?

- Nothing
- Snorkelling gear (mask + air tube)
- Underwater camera/GoPro
- Scuba diving gear
- Fins
- Swimsuit
- Wetsuit

**12.** Is a tour operator in the water at the same time with the tourists?

- All the time
- Most of the time
- Half of the time
- Some time
- Not at all

**13.** In the Bantay Dugong in the water at the same time with the tourists?

- All the time
- Most of the time
- Half of the time
- Some time
- Not at all

**14. Is a dugong spotted?**

- o Yes, number: .....

**14a. Dugong(s) behaviour at first encounter:**

- Resting
- Swimming
- Feeding
- Playing
- Other: .....

**14b. Does the dugong(s) change of behaviour as result of tourist interaction?**

- o No
- o Yes:
  - Swimming away
  - Avoiding tourists
  - Having trouble finding breathing space
  - Other: .....

**14c. The change in behaviour occurred after ..... minutes**

**14d. It was caused by a violation of the protocol?**

- o Yes, namely rule(s): .....
- o No

- o No:

**14e. At which locations did the boat try to spot dugong?**

- Aban-Aban
- Dimipac
- Maltanubong
- An illegal dugong watching site:  
GPS: .....

**14f. Who made the decision to move to an illegal area?**

- Bantay Dugong       Tour operator       Tourist

**14g. Who was asking to move to another area?**

- Bantay Dugong       Tour operator       Tourist

**15.** Does the tourist obey the protocol rules in the water, during interaction with a dugong?

- Always
- Often
- Regularly
- Sometimes
- Never

**15a.** When a protocol rule was not obeyed:

Behaviour of tourist:

.....  
.....  
.....

(Re)action of Bantay Dugong:

.....  
.....  
.....

**16.** When fins are used by tourists: Is there dugong, water or sediment disturbance from fin use by swimming tourists?

- No disturbance
- Sediment disturbance
- Noise making disturbance
- Scaring the dugong

**17.** What other activities are done on the dugong watching trip except dugong watching/interaction and at which location:

.....  
.....  
.....

**18.** Time tourist boat is back at Calauit dock: \_\_ : \_\_ hrs

**19. Times.**

**19a.** Location: .....

**19b.** Time of Bantay Dugong and researcher entering the tourist boat: \_\_ : \_\_ hrs

**19c.** Time of docking the boat to buoy or earlier boat: \_\_ : \_\_ hrs

**19d.** What position in line is the boat?

- 1    2    3    4    More: .....

**19e.** Time of first dugong is spotted in the area: \_\_ : \_\_ hrs

**First group of tourists**

**19f.** Group size:    1    2    3    4    More: .....

**19g.** Time of group entering the water: \_\_ : \_\_ hrs

**19h.** Time of start interaction first with dugong: \_\_ : \_\_ hrs

**19i.** Time of ending interaction with dugong: \_\_ : \_\_ hrs

**19j.** Time of group exiting the water: \_\_ : \_\_ hrs

**19k.** Violations not effecting the dugong:

- Dugong interaction longer than 20 minutes
- Tourists closer than 5 meters from dugong
- Tourists swimming in front of the dugong
- .....

**Second group of tourists**

**19l.** Group size:    1    2    3    4    More: .....

**19m.** Time of group entering the water: \_\_ : \_\_ hrs

**19n.** Time of start interaction first with dugong: \_\_ : \_\_ hrs

**19o.** Time of ending interaction with dugong: \_\_ : \_\_ hrs

**19p.** Time of group exiting the water: \_\_ : \_\_ hrs

**19q.** Violations not effecting the dugong:

- Dugong interaction longer than 20 minutes
- Tourists closer than 5 meters from dugong
- Tourists swimming in front of the dugong
- .....

**Third group of tourists**

**19r.** Group size:    1    2    3    4    More: .....

**19s.** Time of group entering the water: \_\_ : \_\_ hrs

**19t.** Time of start interaction first with dugong: \_\_ : \_\_ hrs

**19u.** Time of ending interaction with dugong: \_\_ : \_\_ hrs

**19v.** Time of group exiting the water: \_\_ : \_\_ hrs

**19w.** Violations not effecting the dugong:

- Dugong interaction longer than 20 minutes
- Tourists closer than 5 meters from dugong
- Tourists swimming in front of the dugong
- .....

# Dugong watching research

May & June 2018

## BANTAY DUGONG

1. How often do you accompany a dugong watching trip?  
.....
  
2. What is your main income and/or other job aside from being Bantay Dugong?
  - o Fisherman
  - o Other: .....
  
3. Do you always fill in the dugong watching trip form?
  - o Yes
  - o No, not when: .....
  
4. How difficult is the form to fill in?
  - o Difficult
  - o Doable
  - o Easy
  
5. Should the form be improved?
  - o Yes. How?  
.....  
.....  
.....
  - o No
  
6. Should there be less questions on the form?
  - o Yes, questions that could be abandoned are: .....
  - .....
  - .....
  - o No
  
7. Should there be more questions on the form?
  - o Yes, questions about: .....
  - .....
  - .....
  - o No, current form contains all necessary data.

8. Do you take the form with you on the trip?

- Always (10 out of 10 trips)
- Often (8 out of 10 trips)
- Regularly (5 out of 10 trips)
- Sometimes (2 out of 10 trips)
- Never (0 out of 10 trips)

9. When do you normally fill in the form?

- Right after a dugong sighting.
- Right after all tourists have finished the dugong watching in the water.
- When I return at the Calauit office.
- Other time: .....

10. How does the form benefit the dugong watching enterprise?

.....  
.....  
.....

11. How confident are you to explain the dugong watching protocol?

1   2   3   4

1 = not confident, I don't dare to explain the rules

2 = low confidence, I just explain rules and quickly get it over with.

3 = medium confidence, I explain the rules and I will answer questions about the dugong watching trip.

4 = high confidence, I have no problems with explaining the rules and I answer question about the dugong watching trip and myself.

12. How confident are you to correct to tourist?

1   2   3   4

1 = not confident, I don't interact with the tourists.

2 = low confidence, I correct a tourist only if I see they are harming the dugong.

3 = medium confidence, I correct a tourist when he/she breaks a rule

4 = high confidence, I warn tourist who are likely to break one or more rules.

**13.** What are hotspots for dugongs according to your experience? (Pointing on a map 0

**13a.** How many dugongs do you often spot there?

- 1
- 2
- 3
- More: .....

**14.** Do dugongs around Calait stay in a small area where they return every day/week/month?

- Yes:
  - Every day
  - Every two days
  - Every three days
  - Every week
  - Every two weeks
  - Every month
  - Seasonal
- No

**15.** What do you know about seagrass and its functions?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

**16.** How did Calait maintain high quality and quantity of large seagrass beds in the last ten years?

.....

.....

.....

# Dugong watching research

May & June 2018

**TOURIST**

1. In which country do you live? .....

2. What is your age? .....

3. What is your gender?

- Female
- Male
- Other

4. What is your highest achieved education?

- Elementary school
- High school
- Higher education but not university
- University degree

5. What languages do you speak?

- |                                |                               |
|--------------------------------|-------------------------------|
| <input type="radio"/> English  | <input type="radio"/> French  |
| <input type="radio"/> Tagalog  | <input type="radio"/> Spanish |
| <input type="radio"/> Chinese  | <input type="radio"/> Dutch   |
| <input type="radio"/> Japanese | <input type="radio"/> .....   |
| <input type="radio"/> Korean   | <input type="radio"/> .....   |
| <input type="radio"/> German   |                               |

6. What is your level of English?

(circle number)

1 2 3 4 5

- 1 = nothing
- 2 = only a few words
- 3 = basic
- 4 = advanced
- 5 = fluent

- 7.** What is your annual net income (after taxes)?
- US\$ 0 – 10,000
  - US\$ 10,000 – 20,000
  - US\$ 20,000 – 30,000
  - US\$ 30,000 – 40,000
  - US\$ 40,000 – 50,000
  - US\$ 50,000 – 60,000
  - US\$ 60,000 and over
- 8.** How long are you staying on Busuanga island?
- ..... days
  - ..... weeks
- 9.** How long are you staying in the Philippines?
- ..... days
  - ..... weeks
- 10.** With which tour operator did you join the dugong watching trip?
- Dugong Dive Center
  - Club Paradise
  - Vicky's Guest House
  - Kiss Diving
  - Medusa Dive Center
  - W. Divers Coron
  - Sand Castle
  - BBL Divers
  - Safari Camp Ismael
  - SEAsia Dive Adventures Inc.
  - Walk-in
  - Other: .....

**11.** Is this the first time you are on a dugong watching trip in Calait (Busuanga, Palawan)?

- Yes
- No:

**11a.** How many times have you visited the area to spot dugongs? .....

**12.** Are you on this dugong watching trip because: (multiple answers possible)

- I heard of the possibility at my resort/hotel/accommodation
- I heard about dugong from other travellers
- I read about dugong watching trips on the internet while planning my trip
- I knew about dugongs before I came to the Philippines and wanted to see them here
- Other: .....

**14.** Were you aware of the regulations about the dugong watching trip before you entered the boat?

- Yes:

**14a.** How did you know about the regulations? (multiple answers possible)

- Regulations were explained by tour operator
- I have read the regulations on paper/digitally at the tour operator
- Other: .....

- No

**15.** Are you personally (or together with your partner) paying for the trip?

- Yes
- No

**16.** How much did you pay for the whole dugong watching trip package for one person?

.....

**16a.** What is included in the trip? (multiple answers possible)

- Sighting of dugong(s) only
- Snorkelling with dugong(s)
- Diving with dugong (and other dives):

**16b.** How many dives are included in the package?

- 1
- 2
- 3
- More: .....

**17.** Do you think that you need to pay a fee to enter the Calait waters?

- Yes
- No

**18.** Do you know how much is the entrance fee?

- Yes, namely: .....
- No

**19.** Do you know where the money of the entrance fee is used for?

- Yes, namely:  
.....  
.....
- No

**20.** Do you know what C3 is?

- Yes, namely: .....
- No

**21.** What do you know about dugongs at the end of the dugong watching trip?

**21a.** Is it true that seagrass is their only diet?

- I don't know
- Yes
- No

**21b.** Dugong produce one calf (baby) every:

- I don't know
- 1-3 years
- 3-7 years
- 7-12 year

**21c.** Dugongs can reach an age of:

- I don't know
- 30 years
- 50 years
- 70 years
- 90 years
- 110 years

**21d.** What is the current status of the dugong globally?

- I don't know
- Not threatened
- Vulnerable
- Close to extinction

**21e.** Do you know more things about dugongs?

.....  
.....

**22.** Please answer if you would pay the price for the one-day dugong watching package at every price per person listed in the table.

(Please, mark for each price if you would be definitely willing to pay, probably willing to pay, probably not willing to pay or definitely not willing to pay)

Example:

<i>Price per person</i>	<b>Definitely yes</b>	<b>Probably yes</b>	<b>Probably not</b>	<b>Definitely not</b>
<i>PHP 100</i>	x			
<i>PHP 20.000</i>				x

<b>Price per person</b>	<b>Definitely yes</b>	<b>Probably yes</b>	<b>Probably not</b>	<b>Definitely not</b>
<i>PHP 2.500</i>				
<i>PHP 2.750</i>				
<i>PHP 3.000</i>				
<i>PHP 3.250</i>				
<i>PHP 3.500</i>				
<i>PHP 3.750</i>				
<i>PHP 4.000</i>				
<i>PHP 4.250</i>				
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<i>PHP 7.000</i>				
<i>PHP 7.500</i>				
<i>PHP 8.000</i>				
<i>PHP 8.500</i>				
<i>PHP 9.000</i>				
<i>PHP 9.500</i>				
<i>PHP 10.000</i>				
<i>PHP 10.500</i>				
<i>PHP 11.000</i>				

**23.** Please answer if you would pay the price for the one-day dugong watching package at every price per person listed in the table **if at least 10% of your payment is spend on conservation efforts for the dugongs?**

(Please, mark for each price if you would be definitely willing to pay, probably willing to pay, probably not willing to pay or definitely not willing to pay)

Example:

<i>Price per person</i>	Definitely yes	Probably yes	Probably not	Definitely not
<i>PHP 100</i>	x			
<i>PHP 20.000</i>				x

<i>Price per person</i>	Definitely yes	Probably yes	Probably not	Definitely not
<i>PHP 2.500</i>				
<i>PHP 2.750</i>				
<i>PHP 3.000</i>				
<i>PHP 3.250</i>				
<i>PHP 3.500</i>				
<i>PHP 3.750</i>				
<i>PHP 4.000</i>				
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<i>PHP 8.500</i>				
<i>PHP 9.000</i>				
<i>PHP 9.500</i>				
<i>PHP 10.000</i>				
<i>PHP 10.500</i>				
<i>PHP 11.000</i>				

## Questions at the end of the trip

**24.** How clear was the explanation of rules about swimming with the dugong, explained by the dugong ranger (Bantay Dugong)? (circle number)

1   2   3   4   5

1 = barely, impossible to understand explanation of protocol

2 = not sufficient, no clear explanation of protocol but understood it for some part

3 = basic, just enough for explaining the protocol clearly

4 = advanced, clear explanation of the protocol and I could ask some questions and get answer from the ranger

5 = fluent

**25.** Are you satisfied after the dugong watching trip? (circle number)

1   2   3   4   5

1 = I am not at all satisfied

2 = The trip did not fulfil my expectations, I liked only a very small part of it.

3 = The trip was okay, I'm not satisfied nor disappointed

4 = The trip was great, it fulfilled my expectations

5 = The trip was perfect, it exceeded my expectations

**26.** Would you recommend the dugong watching trip to a friend, relative or other?

Yes

No

APPENDIX G. ORIGINAL DUGONG WATCHING MONITORING FORM



**DUGONG WATCHING REPORT**

PETSA: \_\_\_\_\_ TOUR OPERATOR: \_\_\_\_\_  
 # OF TOURISTS: \_\_\_\_\_ BOAT: \_\_\_\_\_

WEATHER:  maaraw  maulan  
 malakas ang hangin  kalmada  
 malabo ang dagat  malinaw ang dagat

MOON PHASE: \_\_\_\_\_ TIDE:  high  low

LOCATION: \_\_\_\_\_

1. 1<sup>st</sup> 4 GUESTS TIME OF INTERACTION: \_\_\_\_\_

# of dugong: \_\_\_\_\_ piraso  mother and calf size of dugong: \_\_\_\_\_ at \_\_\_\_\_ metro

DUGONG BEHAVIOR:  kumakain  namamahinga  
 lumalangoy-langoy  naglalaro  
 iba pa: \_\_\_\_\_

AVOIDANT BEHAVIOR:  swim away fast  avoid/iwas  
 iba pa: \_\_\_\_\_

CHANGE BEHAVIOR: \_\_\_\_\_ to \_\_\_\_\_  
 \_\_\_\_\_ to \_\_\_\_\_

VIOLATIONS:  injury to dugong  less than 5-meter distance  
 touching  flash photography  
 chasing the animal  
 iba pa: \_\_\_\_\_

ACTION(S) TAKEN:  abort  fines and penalties \_\_\_\_\_

# local boats passing < 50 meters: \_\_\_\_\_ MB \_\_\_\_\_ PB Iba pa: \_\_\_\_\_

OTHER OBSERVATIONS: \_\_\_\_\_

2. 2<sup>nd</sup> 4 GUESTS TIME OF INTERACTION: \_\_\_\_\_

# of dugong: \_\_\_\_\_ piraso  mother and calf size of dugong: \_\_\_\_\_ at \_\_\_\_\_ metro

DUGONG BEHAVIOR:  kumakain  namamahinga  
 lumalangoy-langoy  naglalaro  
 iba pa: \_\_\_\_\_

AVOIDANT BEHAVIOR:  swim away fast  avoid/iwas  
 iba pa: \_\_\_\_\_

CHANGE BEHAVIOR: \_\_\_\_\_ to \_\_\_\_\_  
 \_\_\_\_\_ to \_\_\_\_\_

VIOLATIONS:  injury to dugong  less than 5-meter distance  
 touching  flash photography  
 chasing the animal  
 iba pa: \_\_\_\_\_

ACTION(S) TAKEN:  abort  fines and penalties \_\_\_\_\_

# local boats passing < 50 meters: \_\_\_\_\_ MB \_\_\_\_\_ PB Iba pa: \_\_\_\_\_

OTHER OBSERVATIONS: \_\_\_\_\_

Reported by: \_\_\_\_\_  
 Calawit Bantay Dugong





## DUGONG WATCHING MONITORING FORM

**INSTRUCTION:** Mark a cross at every answer that is applicable to the situation  
 Every question needs to be answered with at least one cross

Example: **DUGONG BEHAVIOR:**  eating  resting  
 swimming  playing

**2<sup>nd</sup> GROUP NUMBER OF TOURISTS:** \_\_\_\_\_ **LOCATION:** \_\_\_\_\_

**START INTERACTION:** \_\_ : \_\_ am/pm  
**END INTERACTION:** \_\_ : \_\_ am/pm

**ACTIVITIES:**  snorkeling  scuba diving  underwater photography

**NUMBER DUGONG:** \_\_\_\_\_ animals  mother and calf

**SIZE OF DUGONG:** \_\_\_\_\_ meter

**DUGONG BEHAVIOR:**  eating  resting  
 swimming  playing  
 other: \_\_\_\_\_

**AVOIDANT BEHAVIOR:**  none  avoid  swim away fast  
 other: \_\_\_\_\_

**CHANGE BEHAVIOR:**  no change  
 change from \_\_\_\_\_ to \_\_\_\_\_

**VIOLATIONS:**  none  injury to dugong  
 touching  flash photography  
 chasing the animal  less than 5-meter distance  
 other: \_\_\_\_\_

**ACTION(S) TAKEN:**  none  abort  
 fines and penalties: \_\_\_\_\_

**Number of boats passing within 50 meters:** \_\_\_\_\_ motorized boats  
 \_\_\_\_\_ peddle boats  
 other: \_\_\_\_\_

**OTHER OBSERVATIONS:** \_\_\_\_\_

Reported by: \_\_\_\_\_  
 Calawit Bantay Dugong

Signature: \_\_\_\_\_

# APPENDIX I. INTERMEDIATE RECOMMENDATION FOR THE DUGONG WATCHING ENTERPRISE



## Intermediate recommendation

For Bantay Dugong on Dugong Watching practices

### Introduction:

C3 Philippines deployed Intern student, Ms. Iris van Veghel to conduct research and provide assistance to the guided Dugong Watching activities in Calawit Island, Busuanga, Palawan. Iris already finished her first 2 weeks of observation and data gathering on 6-19 May 2018. Recognizing the need to improve on one of the important aspects of the guided dugong watching activity, this intermediate recommendation was issued.

### Observations

Iris, joined twelve (12) dugong watching trips in the weeks of 7<sup>th</sup> and 14<sup>th</sup> May 2018. During seven of these trips no explanation about the dugong watching guidelines was given. Often this occurred when the tour operator does a briefing or when they say they already did a briefing before the trip. Resulting often in many violations during the dugong-tourist interaction time.

### Recommendation

On every Dugong Watching trip, there should be an explanation of the official dugong watching guideline done by the Bantay Dugong on duty. Regardless of a briefing done by the tour operator.

### Reasons why

- Giving a guideline explanation avoids violations, rather than waiting for a violation to happen and then to react on it. In the end, this means less for the Bantay Dugong.
- The tourist should be personally introduced to Bantay Dugong on the boat to understand the importance. Because when tourists meet the Bantay Dugong for the first time in the water, while violating the guidelines, they don't know who you are and that you have authority as a Bantay Dugong

C3 Philippines, Inc.

Community Centred Conservation (C3)

INC member since 2019 • Organization in Special Consultative Status with the United Nations Framework and World Council (PSC/2002) since 2016

Sevacion, Busuanga, Palawan, 5317 Philippines

[www.c-3.org.uk](http://www.c-3.org.uk)

SEC Registration No. CN20115227



- The briefings given by tour operators are not complete. The tour operators do not tell all guidelines. For example, the tour operator never tells that Bantay Dugong can abort the trip.
- The guidelines told by the tour operator are sometimes slightly different than the official guidelines. For example, they say that tourists should maintain a distance of four or three meters, while officially this should be five meters!
- For foreign tourist, Bantay Dugong look the same as the boat crew. When giving a briefing, the tourist will understand that Bantay Dugong are different and their importance concerning the wellbeing of the dugong.
- It is very important that the tourists understand that the Bantay Dugong have the authority to abort the trip, and therefore take the guidelines serious.
- It is good for tourists to hear guidelines twice, as it is proven that people remember things better when information is repeated. (Better twice, then not hearing guidelines at all)

#### How to improve

Every tour should have an explanation of the dugong watching guidelines by at least one of the Bantay Dugong present on the boat. This personally explanation should be done, regardless of an optional briefing done by the tour operator. To make sure all guidelines are explained, the Bantay Dugong should bring a printed and laminated guideline paper, which can be leading in the explanation. Even if Bantay Dugong are not confident in speaking English, they can practice reading out loud the guidelines at home from the paper and read them out loud during the trip read to the tourists. Showing the guidelines on paper hopefully also increases the understanding of importance of the guidelines and it can help the Bantay Dugong in his explanation.

**C3 Philippines, Inc.**

Community Centred Conservation (C3)

INC# number: since 2019 • Organization in Suluw. Government Status with  
INC# filed: Suluw. Government and RA#1413 (inc. 1) (INC#900) since 2019

Savacion, Busuanga, Palawan, 5317 Philippines

[www.c3.org.uk](http://www.c3.org.uk)

SEC Registration No. CN201115227

## APPENDIX J. ESTIMATED REVENUES

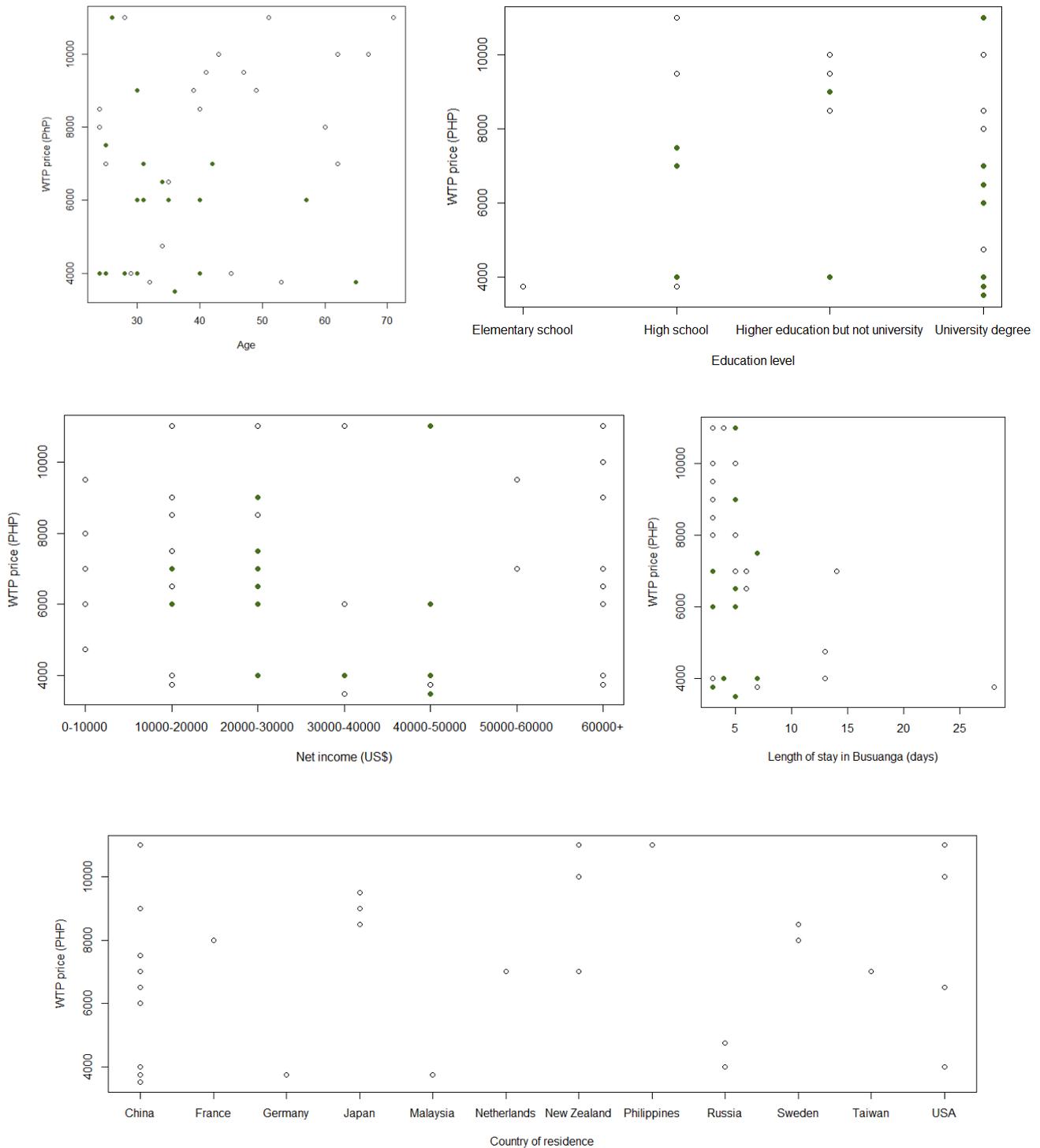
The estimated revenues of the Dugong Watching Enterprise and the seven most active tour operators.

	Dugong Dive Center	Club Paradise	Kiss Diving	Vicky's Guest house	Medusa Dive Center	W Divers Coron	Sand Castle	Totals	Dugong Watching Enterprise
<b>January</b>									
<i>Number of tourists</i>	71	17	21	22	0	14	2	147	
<i>Number of trips</i>	8	5	4	6	0	2	1	26	
<i>Estimated revenue (PHP)</i>	384,678	88,723	220,500	132,000	0	84,000	7,000	916,901	44,100
<b>February</b>									
<i>Number of tourists</i>	150	39	34	15	18	2	0	258	
<i>Number of trips</i>	18	6	4	3	3	1	0	35	
<i>Estimated revenue (PHP)</i>	812,700	203,541	357,000	90,000	144,000	12,000	0	1,619,241	77,400
<b>March</b>									
<i>Number of tourists</i>	145	42	45	18	6	0	19	275	
<i>Number of trips</i>	22	9	7	4	1	0	4	47	
<i>Estimated revenue (PHP)</i>	785,610	219,198	472,500	108,000	48,000	0	66,500	1,699,808	82,500
<b>April</b>									
<i>Number of tourists</i>	130	27	32	14	6	10	2	221	
<i>Number of trips</i>	19	5	4	2	1	2	1	34	
<i>Estimated revenue (PHP)</i>	704,340	140,913	336,000	84,000	48,000	60,000	7,000	1,380,253	66,300
<b>May</b>									
<i>Number of tourists</i>	257	44	36	21	18	6	3	385	
<i>Number of trips</i>	29	9	6	6	3	1	2	56	
<i>Estimated revenue (PHP)</i>	1,392,426	229,636	378,000	126,000	144,000	36,000	10,500	2,316,562	115,500
<b>Totals</b>									
Number of tourists	753	169	168	90	48	32	26	1286	
Number of trips	96	34	25	21	8	6	8	198	
Estimated revenue	4,079,754	882,011	1,764,000	540,000	384,000	192,000	91,000	7,932,765	385,800

## APPENDIX K. ABSENCE OF CORRELATIONS

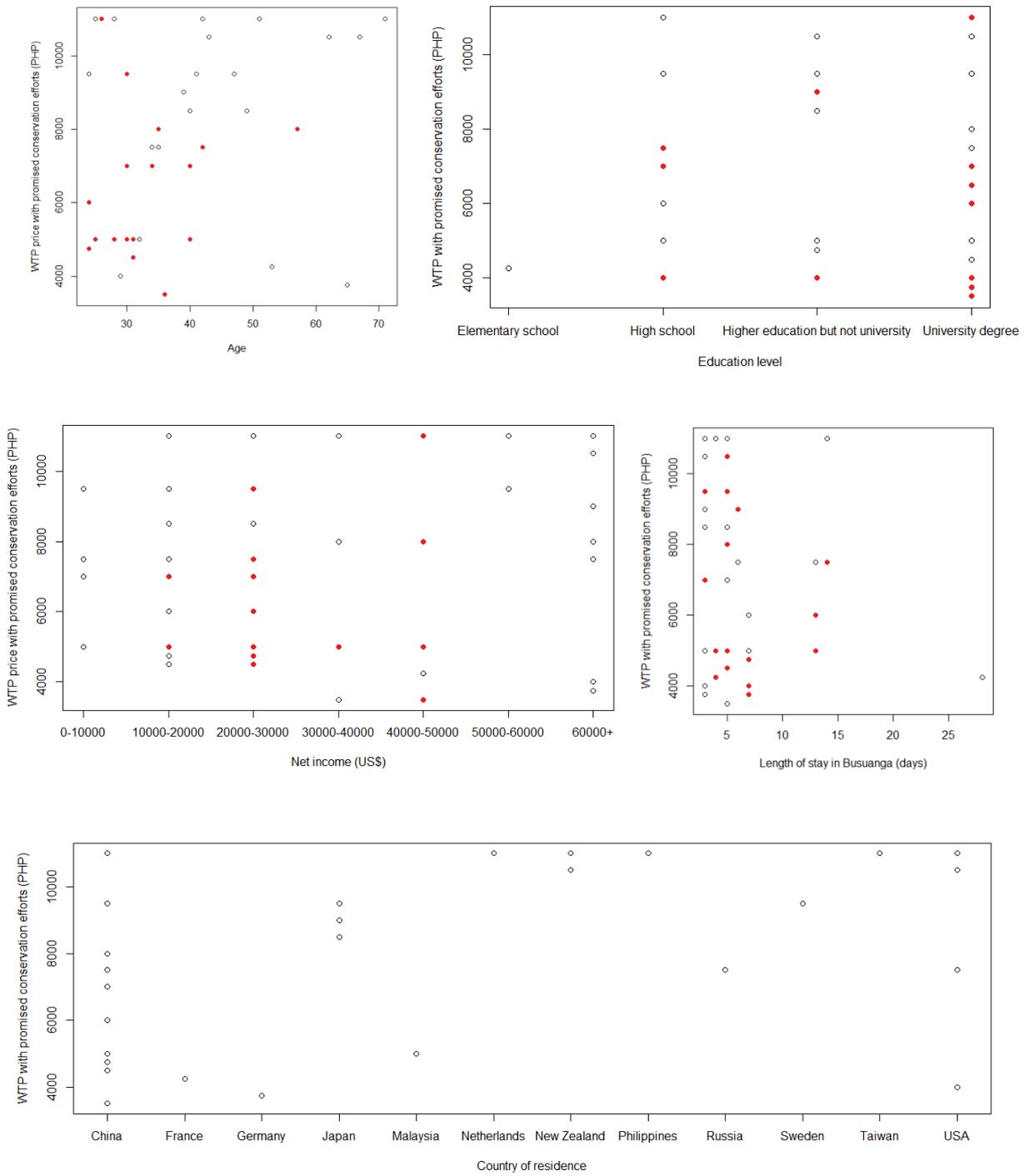
### WTP prices

The figures on this page show the WTP price for a one-day dugong watching trip plotted against the categories: age, education level, net income, length of stay in Busuanga and citizenship. The green coloured dots represent Chinese residents, white dots are tourists with another citizenship.



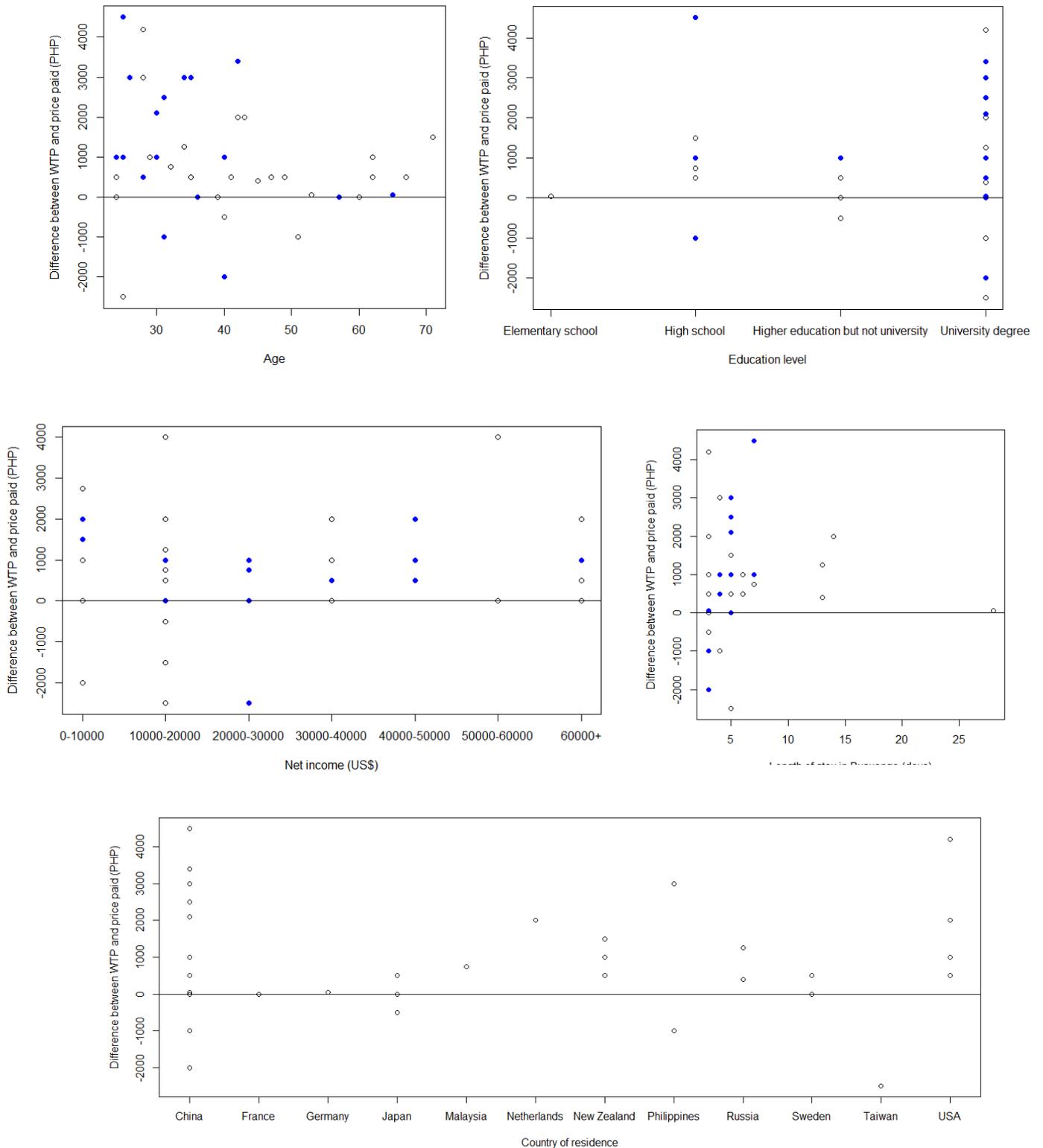
### WTP with promised conservation efforts

The figures on this page show the WTP when dugong conservation efforts were promised plotted against the categories: age, education level, net income, length of stay in Busuanga and citizenship. The red coloured dots represent Chinese residents, white dots are tourists with another citizenship.



### Difference between WTP and price paid

The figures on this page show the difference between the WTP price and the price paid for a one-day dugong watching trip plotted against the categories: age, education level, net income, length of stay in Busuanga and citizenship. The blue coloured dots represent Chinese residents, white dots are tourists with another citizenship.



## APPENDIX L. CALL TO ACTION

### CALL TO ACTION: What should be done for the dugongs in Calauit Island

The dugong (*Dugong dugon*) is the world's only herbivorous marine mammal. Dugong populations are known to be declining throughout its huge range that spans some 40 countries because of human activities such as fishery by-catch, direct hunting, rapid coastal development and vessel collisions. The dugong is categorized as Vulnerable (VU) in the International Union of Conservation of Nature (IUCN) Red List, which means that this species faces a high risk of extinction in the wild in the medium-term future. In the Philippines, dugongs occur in very small scattered populations and are considered Critically Endangered in Section 2 (List of Threatened Wildlife and their Categories) of the DENR Administrative Order No. 2004-15.

Dugongs are valuable to the seagrass ecosystem and people. They promote nutrient recycling, and increase the nutrient content in seagrasses (Aragones et al. 2006), thus improving productivity of the seagrass ecosystem (Aragones et al. 2012). Human communities benefit from this increase in seagrass productivity because seagrasses are also vital spawning and breeding grounds for economically important marine organisms (Marsh et al. 2011). Dugongs are also central to tourism activities such as dugong-watching and have important biodiversity and cultural values.

Calauit Island, Busuanga, is one of the most important dugong habitats in the Philippines. Using land-based survey techniques, Aragones (1994), estimated that the number of dugongs in the waters surrounding the island was about 15. In 2016, this study was repeated, and an estimated 24-27 dugongs were recorded. While the second set of surveys suggests that the population may have undergone a small increase in the last 20 years, both sets of surveys indicate that the population is very small, supporting the dugong's Critically Endangered Listing in the Philippines.

With Indigenous Peoples having the authority in the area, and in view of the vulnerability of dugongs around Calauit Island, Busuanga, to various threats, including dugong watching

#### WE APPEAL:

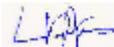
*To the Council of Elders*, to use all the means at their disposal to protect the population of dugongs surrounding Calauit Island and to ensure that all activities undertaken are not hindrance to animals' movement, daily feeding and protection. This action is essential since the disappearance of the dugong in the marine ecosystem may cause a decline of key ecosystem functions (i.e. habitat for commercially important and threatened species), altering the productivity of the seagrass ecosystem which is a spawning and breeding ground of economically important marine species, to which communities' benefit from.

To consider adopting C3's recommendations with regards to improving the management and monitoring of the current dugong watching enterprise at Calauit Island so that the dugongs can continue to exist in harmony with people at this critical site.

For the sake of dugong conservation!



**Helene D. Marsh, PhD**  
Co-chair, Sirenian Specialist  
Group, Professor Emeritus,  
James Cook University



**Lemnuel V. Aragones, PhD**  
Sirenian Specialist Group  
Professor, UP Diliman



**Patricia Davis**  
Sirenian Specialist Group  
Board member, C3  
Philippines

