Report on Responsible Whale & Dolphin Watching

The commercial advantages of a sustainable approach

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1. Introduction

This report has been produced by Planet Whale with funding from Defra (The Department for Environment, Food and Rural Affairs in the UK). It is intended to raise awareness of the various sustainability initiatives implemented by whale and dolphin watch operators worldwide and highlight the positive impact these have had on their businesses and the marine environment. It is hoped that showcasing their collective success will inspire other operators to follow suit, and crucially, will demonstrate the ability, passion and commitment of those leading the way in the industry, to develop their own practical and workable solutions to both local and global issues of sustainability and environmental responsibility.

It is the intention of Planet Whale and the twelve whale and dolphin watch operators that formed a partnership in order to contribute to this report that it represents the first step in a process that will lead to increasing self-governance within the industry, assisted by a growing partnership of companies worldwide that share the same values and desire to improve both the standards of their business and their commitment to the marine environment.

The long-term impact of this work will include increased public awareness about the need to preserve the oceans and their wildlife, higher quality whale and dolphin watching experiences for customers, greater protection for marine mammals, and improved livelihoods for the coastal communities that depend on whale and dolphin watching tourism.

2. Why this report is important

There is a long history of affinity between humans and cetaceans, and consequently, a huge fascination and growing public demand to see these animals. Although there remain numerous opportunities to visit captive whale and dolphin attractions, they are becoming increasingly controversial for welfare reasons and in no way replicate the natural habitat or natural behaviours of these marine mammals.

The desire to see whales and dolphins in the wild is increasing in demand worldwide (attracting over 13 million people in 119 countries in 20081), and there are many positive aspects to watching whales and dolphins from commercial vessels, including improved opportunities for research and the potential to educate and inspire millions of people.2

However, there is also growing evidence to show that watching whales and dolphins in the wild may be having a detrimental effect upon them. Although this is by no means universally true, it is widely accepted that the whale and dolphin watching industry remains poorly regulated in many areas and suffers from a lack of internal direction. The standard of tours on offer is also highly variable.

This report will show that the whale and dolphin watching industry has already developed viable solutions to many of the problems arising and is willing to discuss how these can be implemented across the industry. It takes an honest and in-depth look at how issues of sustainability and responsibility are being tackled by those who are closest to them - the whale and dolphin watch tour operators.

It is intended that by sharing the experience and knowledge they have picked up over many years of whale and dolphin watching, the companies in this report will underline the commercial benefit that sustainable operation has brought to their businesses. It is hoped that other operators will be inspired to incorporate some of the methods described, and contribute their own ideas as the partnership of operators expands in the coming years.

2 Planet Whale definition for sustainable whale and dolphin watching: A tour to see wild whales or dolphins by a commercial operator who accepts a responsibility to preserve and protect the animals and ecosystems it interacts with. Sustainable whale and dolphin watch operators invest, where possible, in local conservation efforts and offer the best learning experiences for passengers. They act according to codes of conduct which put the welfare of whales and dolphins first.
3. Background

Written by some of the leading whale and dolphin watching businesses from around the world, this report presents a series of case studies that illustrate the commercial advantages of a sustainable approach.

This report was launched at the first World Whale Watch Conference, held in Brighton, UK, on 25th October 2012, and organised by Planet Whale. During the conference, whale and dolphin watching businesses presented their case studies and encouraged operators from around the world to adopt new strategies that will prioritise the welfare of whales and dolphins and the long-term sustainability of the industry.

The case studies were collected from whale and dolphin watch operators who are affiliated to the Planet Whale website at www.planetwhale.com. PlanetWhale.com is a free platform for whale and dolphin watch operators to list their tours, and a search engine that enables the public to find and compare trips like for like. In 2011 Planet Whale also launched the world’s first review system that asks tourists to rate and review their trips based on five critical aspects of their business that relate to responsibility and sustainability.

These questions, defined as being the most important in developing a sustainable whale watching industry by a team of responsible whale watch operators and marine conservation charities, will be used by whale watchers across the world to rate their trips on PlanetWhale.com in the coming years.

Planet Whale continues to develop new strategies to publicise those whale and dolphin watch operators that offer the best learning experiences for passengers and put the welfare of whales and dolphins first. Planet Whale rewards those operators willing to adopt a sustainable approach by generating press stories, additional exposure at WhaleFest – the world’s largest whale festival, and through the Responsible Whale Watch Awards. Planet Whale believes that the most sustainable trips can also be the most profitable, and intends to work with operators around the world to make that happen.

4. The Planet Whale rating system

All whale and dolphin watch operators listed on PlanetWhale.com have opened themselves to public scrutiny through Planet Whale’s unique rating and review system. This system was established by Planet Whale as a core part of its strategy to raise the standards of whale and dolphin watching worldwide. The system is based on five questions that identify important aspects of the quality and sustainability of a whale or dolphin watching trip. Five founder partners (DolphinCare Africa, OceanCare, Whale and Dolphin Watch Australia, Sea Life Surveys, and Whale Watch West Cork), representing both the commercial and charitable sectors, worked together to develop these questions. Customers visiting the Planet Whale website are then asked to give feedback based on how well their trip delivered in these key areas. Sustainability amongst operators is rewarded, as those trips rated highest by the public will always appear at the top of any search result on the Planet Whale website, encouraging users of the site to travel with the best and most sustainable whale and dolphin watching trips available.

The five questions making up the Planet Whale rating system are as follows:

How well did the trip publicise and use guidelines for safe approach to whales / dolphins?
There are many different guidelines (also known as codes of conduct), for safe approach to whales and dolphins. In some countries these guidelines are a legal requirement, whilst in others they are adopted voluntarily. All whale and dolphin watch operators should adhere to guidelines for a safe approach, whether they are required to do so by law or not. Before boats encounter whales or dolphins, customers should always be notified how the operator approaches animals safely and in line with a set of guidelines.

How valuable was the trip as a learning experience?
The very best whale and dolphin watching trips are a mixture of inspiration and education. There are so many fascinating facts, stories and mysteries that surround whales, dolphins, other marine wildlife and the sea, that trips should be a great learning experience – even if no whales and dolphins are spotted. On the very worst whale and dolphin watching trips, participants are told nothing about the animals they come across. They may even be
left wondering whether they have seen a whale or dolphin! Almost as bad are recorded messages, or standard presentations by guides that discuss the biology of whales and dolphins as if reading from a textbook, but give no information about the specific animals customers are likely to see.

The best trips employ an experienced and engaging guide, who is available at all times to answer questions and provide regular and accurate information - not just on whales and dolphins, but also on other marine life and points of interest on the trip. The very best whale watch operators will have made a concerted effort to learn about the individuals and populations of whales and dolphins being watched and can therefore provide insights into the animals that are highly revealing. These operators have generally been involved in long-term research projects themselves, or have supported local studies and benefitted from the results of that research. Finally, the provision of materials such as books, maps, photos, and hands-on materials, such as ethically sourced whale bones or baleen will also add to the educational value of the trip.

**How well did the trip meet your expectations?**

Whale and dolphin watching is an exhilarating experience and it is understandable that people have high expectations when they embark upon a trip. Before taking their first trip, most people’s experience of whales or dolphins comes from the amazing, up-close images common in the media. Whilst these kinds of encounters regularly occur on whale and dolphin watching trips, operators have an obligation to make it clear to passengers that whales and dolphins are wild animals. They must be approached respectfully, and cannot be forced to spend time in close proximity to a vessel if they are engaged in other activities.

The worst whale watch operators advertise their trips (in brochures, websites and other promotional material), with images that show species of whales and dolphins that are not present at that location, or behaviours (such as leaping) that rarely occur on those trips. In addition, poorly run tours often don’t reveal their plan for the excursion, including what is likely to be seen, or when customers will reach the best locations to spot the animals. In contrast, the best whale and dolphin watch operators advertise their trips using images of animals that customers are likely to see, behaving in a way that is typical for that location. In addition, guides will be realistic about what is likely to be seen at the start of the trip, describing recent sightings, the effect of local weather conditions on the chances of an encounter, and giving tips on how to spot the animals.

**How well did the trip minimise its impact on the marine environment?**

As a significant and important part of the ecotourism industry, whale and dolphin watch operators have an obligation to actively seek ways to minimise their impact on the marine environment and to encourage their passengers to behave in a similar way. There are many ways for whale watch operators to reduce their environmental footprint and the best trips will notify participants of several strategies they have implemented to be as ‘green’ as possible. Examples include, but are by no means limited to; carbon reduction programmes, beach clean-ups, or at-sea removal of marine litter, use of propeller guards to reduce the risk of collisions with marine life, speed restrictions to save on fuel and minimise risk to marine life, educational programmes to encourage passengers to be eco-friendly, and an emphasis on purchasing organic and/or locally sourced products.

**Emphasis on trip operator's own research work or support for conservation?**

Many whale and dolphin watch operators allow scientists to conduct benign research from their vessels. This has led to a greater understanding of the conservation and welfare issues affecting these animals and their habitats. These studies often provide the basis for improved conservation and management efforts in the area and are therefore essential in all whale and dolphin watching locations if a sustainable whale watching industry is to develop. All operators participating in research should therefore rate highly on this question. However, it is probably unnecessary for all operators in one location to conduct research. Those that do not should be clear that they support nature conservation or animal welfare projects in another way - either by committing funds to a relevant project or charity, or by being actively involved in local marine conservation efforts themselves.
The following case studies were written by some of the leading whale and dolphin watching businesses across Europe, USA and as far afield as the Dominican Republic, Panama and Mozambique. These businesses joined forces in 2012 as part of the 2012 Whale Watch Operators Partnership – an international collective of whale and dolphin watch operators administered by Planet Whale and committed to spreading awareness and encouraging the adoption of sustainable whale and dolphin watching worldwide. Through sharing their knowledge and experiences, these operators emphasise not only the environmental benefits of operating more sustainably, but the boost to the bottom line that comes from satisfying customers and generating repeat business.

The following case studies are divided into five sections based on the Planet Whale rating system. Please note that the views expressed in these case studies are those of the individual authors. Any concerns or queries should therefore be addressed to the relevant whale or dolphin watch operator directly.

5. ‘Notes from afloat’

Case studies from whale and dolphin watch operators (grouped according to the Planet Whale rating system)

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a) How well did the trip publicise and use guidelines for safe approach to whales / dolphins?
About Dolphin Encountours

Dolphin Encountours was born in the December of 1994 and is the longest, most experienced wild dolphin swim operator along the African eastern seaboard. Our programme is used as a data collection and educational platform that gives guests a special insight into the realm of the wild dolphin through a program that resonates with them as non-human persons; individuals that have their own unique personalities, are self-aware, conscious, cultural and social. We explore the realms of conscious interaction between species and combine eco-tourism and research to further the long-term monitoring of the dolphins of Ponta. All dolphin encounters follow the specially developed DolphinCare code of conduct, allowing for dolphin friendly, non-intrusive viewing on the dolphins terms.

Introduction and history

Dolphin Encountours initiated a structured wild dolphin swim programme in Ponta do Ouro, Mozambique, during the mid-1990’s, after regular visits to the area confirmed the presence of the Indo-Pacific bottlenose dolphin. Following the growing popularity of swimming with dolphins and South Africa’s ban of the activity, Ponta do Ouro, offering a sheltered, quiet bay with dolphins that were regularly sighted, was earmarked as a prime location to establish relations with this specific species. Shortly thereafter, DolphinCare.org was founded as the research and conservation arm of Encountours. An informal memorandum of understanding was also created with the Natural History Museum in Maputo, Mozambique.

By the late 1990’s we had established Africa’s first permanent dolphin interaction and research centre. From the outset, we were keen to operate ethically and we also put a strong focus on the collection of scientifically beneficial data, to create an educational and sustainable dolphin swim programme that would contribute to research and conservation. Tourist activity created a regular and consistent platform for data collection on the resident dolphins, which resulted in the creation of a long-term research and monitoring project. A specially developed code of conduct limited the numbers of boats visiting a single group of dolphins and Dolphin Encountours implemented a strict ‘in water’ code of conduct, which included for example, a no-touch, no-chase policy.

The situation changed in 2009 however, when a key employee branched out and opened a second dolphin swim facility, resulting in a range of other operators following suit. Ponta do Ouro had moved from housing one dedicated dolphin swim project, to having numerous boats offering dolphin and whale watching trips. We anticipated that some operators would continue to adhere to our code of conduct, as they had had previous experience working closely with Dolphin Encountours. A major concern however, was that recreational boats and jet-skis were frequently seen trying to engage with the dolphin pod. The quality and quantity of in-water encounters dropped and evidence that the dolphins were avoiding both the area and human interaction during peak holiday periods became apparent. Another blow came in June 2010 when the project lost everything to a devastating fire. Although things were able to continue to a limited extent, some major income streams were lost. This included accommodation (which generated revenue for the project), and the inevitable reduction in tours, which other operators in the area were quick to capitalise on.

Much time was spent campaigning to see dolphin watching regulated and in 2009 (after a wait of almost a decade), a partial Marine Protected Area (MPA) was proclaimed. However, the transition from this to actual implementation of the management plan that governed the Ponta Partial Marine Reserve (PPMR), took two years, during which time a substantial increase in operators and boating activity was experienced. Finally in November 2011, the management plan for the PPMR was presented to stakeholders and actioned. There are now four ‘permitted’ dolphin and whale operators, two in Ponta do Ouro, one in Malongane and one in Mamoli.
Developing a dolphin friendly swim programme and code of conduct

The objective of our swim programme was to create a safe space for humans and dolphins to interact. This was made possible once the DolphinCare Code of Conduct was developed. The rules were set and it was hoped that with time, a trusting relationship would be formed with the resident dolphins. As time continued to pass, our knowledge expanded and we became better able to understand and distinguish between various behaviours. This helped inform development of the Code and our swim programme. Some behaviours, for example, would indicate we should avoid a group of dolphins. Tail slaps and loud chuffing signal to us that we are not welcome and fast, direct, mock-charging in the water, indicates ‘get out now’. A strict no-touch, no-dive and no-chase policy incorporated into the Code, ensured that dolphins would have right of way and could either choose to engage, or ignore those people watching.

Observing dolphin behaviour prior to in-water encounters is a vital aspect of the Code of Conduct, as this not only allows us time to gauge the dolphins mood, but also gives them time to adjust to the boat being in their space. During this time data is collected and photography undertaken as part of the identification project we support.

The DolphinCare Code of Conduct has evolved over the years and will no doubt continue to change as tourism and development in the area increases. We are grateful that other local operators are following not only the standard Marine Mammal Code of Conduct, set out within the PPMR Management Plan (a fairly standard code for recreational and commercial craft), but also the DolphinCare Code of Conduct, developed specifically for swim-with encounters.

The DolphinCare Code of Conduct

Prior to all encounters, participants receive a full briefing to ensure safety procedures are understood and to minimise stress to the dolphins. We feel that if participants are better able to understand wild dolphin behaviours and can perceive them as intelligent beings, almost like people, they are better able to relate to and respect them. All encounters are led by on-site guides and researchers who have a long-term relationship with the dolphins. Participants do not enter the water on their own without guides. No more than twelve participants are taken on each trip and in-water participants are governed by the dolphins’ behaviour and under the guide’s discretion. Depending on dolphin behaviour, swims are between one to twenty minutes in length.

Water entry

Launching takes place off a semi-rigid dive boat. This has no ladders, so entry into/out of the water takes place over pontoons. We ask guests to slip in over the pontoons quietly and gently when getting into the water. No backward scuba rolls or dives! The aim is to be as quiet as possible, so as not to scare the dolphins away.

Dolphins orientate their world through sound. Loud crashing and aggressive movements will only result in them moving away. Customers are dropped ahead and to the side of an approaching pod, giving them time to relax and wait.

Swim postures

Once in the water, participants are requested to float and wait for the dolphins to approach. They are told to keep their arms by their sides or behind their backs and to move slowly and calmly, causing as little turbulence as possible. Feet should also be kept under the surface of the water when finning.

Dolphins use echo-location to gain information about their surroundings - when people are in the water it is no different. The distinctive click of the echoes can be heard when the pod is approaching. Flailing and groping limbs send back a fuzzy picture, resulting in dolphins preferring to avoid the area.

One of three things will happen when in the water:

- Dolphins will move through the group of people.
- Dolphins will approach and engage with guides and people.
- Dolphins will avoid the group of people resulting in no in-water sightings.
In-water Code of Conduct

a) Once in the water stay in a group and follow your guide/researcher. Guides have been specially trained to recognise certain individuals that are likely to engage and are also able to read visual signals from the dolphins. On occasion, dolphins will signal their reluctance to engage and it is the guide’s job to recognise and act on these behaviours, some of which include mock charges, a show of teeth and S-posturing. It is thought that the use of visual signals by cetaceans is an important mode of close range communication and it is likely that they attempt these methods of communication with humans. Acoustic signals are also taken into account. Generally the more sociable the pod the more vocalising can be heard.

b) Wait quietly for the dolphins to approach you. It is up to the dolphins whether they want to interact. Participants are instructed to wait rather than pursue.

c) Do not swim frantically towards the dolphins or after them. Direct head to head swimming accompanied by an open jaw, is, in dolphin terms, a sign of aggression. Once dolphins move off, participants are asked not to pursue them - if they want to return to interact, they will, and often do.

d) Do not swim directly on top of dolphins. Swimming directly above a dolphin can hinder its ability to breathe.

e) Under no circumstances touch dolphins. There is a strict no-touch rule. This is both as a sign of respect and to minimise any health risks. Dolphin skin is very sensitive and contact could transfer disease or bacteria.

f) The use of underwater scooters is not permitted. These are prohibited in the PPMR.

g) The use of underwater camera flash is not permitted. Participants are instructed to disable any flash that might go off in the water - previous experience indicates this can startle dolphins.

h) No diving down. In order to minimise stress for the animals, Dolphin Encountours took the decision to introduce a no-dive policy in 2009. We had noticed that as more people took to the water, the dolphins were spending less time in our company. Preventing customers from diving down creates a safe space for dolphins to pass under the groups of swimmers above. The only diving permitted is by researchers who need to dive to record certain behaviours.

i) No swimming with newborns. The researcher or guide should enter the water in order to assess the status of individuals and the pod. Operators are not permitted to allow in-water encounters with pods that have calves of less than 30 days old, as this time is important for bonding and there are also heightened risks of predation. If a group splits from the mothers and newborns, interaction can be forthcoming and participants are allowed to enter the water. But every effort should be made not to separate or disturb mothers and neonates.

j) If dolphins are displaying aggressive social/sexual behaviour, water entry is prohibited. During these times viewing is undertaken from the boat rather than in the water, for safety reasons. This behaviour is often characterised by tail slaps, butting and general aggression towards other dolphins and humans who risk getting in the way.

Summary

Inevitably the quality of dolphin interactions has declined slightly over the years, due to the increase in vessel activity (fishing/diving boats and jet-skis) and growth in the number of dolphin swim operators. However, it is likely that development of the DolphinCare Code of Conduct has significantly slowed this decline and should result in the industry being able to continue, despite its rapid and previously unsustainable growth.

Through enabling long term monitoring of a single pod of dolphins, Dolphin Encountours in support of DolphinCare-Africa has also illustrated how swim-with programmes can be used to generate data to expand scientific knowledge and inform the development and improvement of codes of conduct governing interaction with these wonderful animals.

References
ii). Species specific codes of conduct applicable to Cornwall and the UK.
Duncan Jones, Marine Discovery Penzance, UK.

Codes of conduct - a definition
This definition of a code of conduct for organisations comes from the International Federation of Accountants - however if you consider marine animals, boat operators, passengers and the population at large to be stakeholders and constituents then it works quite well:

“Principles, values, standards, or rules of behaviour that guide the decisions, procedures and systems of an organisation in a way that (a) contributes to the welfare of its key stakeholders, and (b) respects the rights of all constituents affected by its operations.”

1 Defining and Developing an Effective Code of Conduct for Organisations, 2007

Wildlife disturbance
Before considering codes of conduct for wildlife disturbance, disturbance itself needs to be defined. Wildlife disturbance could be argued to be anything that alters the behaviour of an animal at any level. In short, by going out to sea in a boat, you are potentially causing the disturbance of wildlife. As stated by Curtin (2010)2 ‘Just being there has a direct impact on the wildlife’. This sounds rather extreme, but it is the view of some, and in reality is a true statement, particularly with regard to marine animals. If we consider this is the case, then it is important that our trips have a value; they must be educational, contribute to research wherever possible and be as low impact as possible. We also must consider what represents an acceptable level of disturbance whether it is covered by legislation or not. The issue of what disturbance is then becomes very subjective. The best way to understand disturbance is to consider studies into disturbance and the alteration of behaviour that relate to the marine wildlife watching industry. A study on whale watching in Scotland by Woods-Ballard (2000)3 defines disturbance and its effects as follows:

<table>
<thead>
<tr>
<th>Effect</th>
<th>Immediate</th>
<th>Direct</th>
<th>Change in an individual’s behavioural status or health, for example as a result of collision</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Indirect</td>
<td>Death of an individual, for example due to a collision, which may have immediate and possibly long term consequences for the success of the breeding group</td>
<td></td>
</tr>
<tr>
<td>Short-term</td>
<td>Direct</td>
<td>Interference with important behaviours such as those related to breeding, courtship and care of young</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect</td>
<td>May temporarily shift use of range, which may develop into permanent range reduction or shift</td>
<td></td>
</tr>
<tr>
<td>Long-term</td>
<td>Direct</td>
<td>Alteration of range size or distribution</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indirect</td>
<td>Potential reduction in reproductive capability and fitness, leading to a decline in population</td>
<td></td>
</tr>
</tbody>
</table>

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The current situation in the UK

The wildlife watching industry in the UK is growing in line with the rest of the world, yet so far remains relatively unregulated with regards to wildlife disturbance. Having said this there is legislation that deals specifically with wildlife disturbance and there are also various voluntary codes. The Wildlife and Countryside Act (1981) should, in theory, prevent wildlife disturbance. Scottish Natural Heritage also have a code of conduct in place based on Scottish legislation. On top of this European legislation also covers the protection of cetaceans and basking sharks from deliberate capture, killing or incidental disturbance/injury. Many NGOs (Non-governmental Organisations) e.g. the Seawatch Foundation and the Shark Trust also set out guidelines for how wildlife should be watched - the aim being to prevent disturbance to animals. There are also two accreditation schemes an operator can sign up to; UK wide there is the WiSe scheme, and in Scotland there is an additional scheme called The Dolphin Space Programme (mainly centred in the Moray Firth area). The WiSe scheme also provides a one day course skippers can attend. It outlines the different animals they might encounter while running trips around the UK and the current guidelines for watching them without causing disturbance. After taking part in this course the skipper leaves as a ‘Wildlife Safe Operator’ and is allowed to display the WiSe logo on their marketing and put a sticker on their boat.

On paper all of this looks very good and it appears the UK is doing a good job of minimising wildlife disturbance. However in my opinion the reality is far from this. Currently no one is actively checking if these schemes/codes are being adhered to. There is also very limited use of the legislation set out to protect wildlife. To date there have been only two prosecutions; both relating to bottlenose dolphin harassment, one in the Moray Firth and the other in Kent. Adherence to the codes and schemes seems to rely on two things -

1. The operators’ understanding of the guidelines/scheme they are signed up to.
2. The moral integrity of the operator to behave in the correct way when out of sight of others, particularly when they are under pressure from passengers to provide the ‘best experience’.

An additional aspect to consider is the boat operator’s understanding of the particular species of animal they are watching and its behaviour. A dolphin is not just a dolphin - it is a specific type of dolphin engaging in a specific activity. All species exhibit different behaviours and can potentially be disturbed in different ways. Even the same species may respond in different ways depending on mood/behaviour, or the make up of its current cohort. As an example, an interaction with common dolphins would play out in a very different way to an interaction with Risso’s dolphins, as much as an interaction with a large pod of active boisterous common dolphins would differ from an interaction with a small nursery pod of common dolphins.

Currently, anyone can set up a company running wildlife watching boats in the UK, provided they meet the required MCA (Maritime Coastguard Agency) boat handling standards and have a licensed boat. Equally, anyone can list codes of conduct they follow on their website and provided they sit the one day course, can become WiSe accredited. No formal checks are made as to how accredited operators interact around the animals they are watching.

Why should codes of conduct be followed?

Many studies show boat interactions with animals can alter their behaviour both short and long term. Steckeneuter (2011)\(^4\) described the effects of tourist boats on dolphins as follows:

‘…dolphins changed their behaviour dramatically when dolphin-watching vessels approached them. Dolphins stopped resting, and spent considerably less time feeding in the presence of dolphin-watching vessels. This may alter dolphins’ energy expenditure and in the long term may affect the health of individual animals, their reproductive success and ultimately the population. The behavioural changes were exacerbated when boats approached closer, or when the number of boats increased.’

If the industry is to be sustainable then this pressure needs to be minimised and well managed. If not, the long term effects could lead to the displacement of a population of animals or at least cause them to frequent an area less regularly. This is not only bad for the animals but bad for the operator.
Following a code shows passengers that the tour company has both respect for, and an understanding of, marine animals. Increasingly, this is an attribute that customers value. Over time this can be very positive for the company, leading to a good reputation and positive publicity. The more positive media attention this gets the more it will become the norm. Responsible operators must lead by example and through education programmes teach the public the responsible way to interact with wildlife.

Approaching animals in a careful, considered manner often leads to better encounters. If animals are relaxed, they are going to exhibit the natural behaviours passengers have come to see. Dolphins and whales are intelligent animals with an acute acoustic sense, so it is very likely that they recognise specific boats. This can mean that repeated ‘good behaviour’ can lead to better encounters as the dolphins begin to recognise the boats that cause them least stress.

Finally, setting a good example to other boat users (both commercial and leisure), fosters a greater awareness that there is a need to be careful and handle a boat in a certain way around wildlife. This should result in less pressure on the animals, which could ultimately mean better and more frequent encounters for the operator. Within our area local leisure boats often take their cues from us on how to interact with wildlife. Local charities are very vocal in issues surrounding wildlife disturbance so many local leisure users are aware of these issues. We have also given talks at local harbour users meetings about wildlife disturbance. This has led to many local leisure users being more aware of what wildlife is out there and acting responsibly when they encounter it. Powell (2009) described the importance of minimising disturbance as follows:

‘Protection of dolphins and their habitat is an important factor in economic sustainability of dolphin-viewing businesses. Even unintended disturbance from people and boats can significantly alter dolphin behaviour and harm the animals. In extreme cases, these marine mammals will permanently move away from their residential bay habitat.’

Suggested best practice approach for watching marine wildlife

The following code of conduct was developed by Marine Discovery Penzance and is based on existing recommendations set out by various NGOs. It also takes into account our last eight years of running wildlife watching trips. We aim to always be reflective about our encounters and consider adjusting our code of conduct according to our observations, or the current evidence from other researchers, as it is presented.

General considerations

- The operator should have an understanding about the area in which they are running the trip. It is good practice to brief passengers about where you are going and what you are looking for in specific areas.
- The operator should have knowledge of, and be able to recognise in the field, all the species that might be encountered during the trip. The operator should talk to passengers about how to recognise the different animals they might see as part of a trip briefing.
- The operator should be able to recognise the signals that will help them understand where animals might be found, e.g. plankton fronts, seabird behaviour, or areas of tidal fronts/upwelling etc.
- Speed should be limited in areas where marine megafauna are likely to be found, e.g. plankton fronts, seabird behaviour, or areas of tidal fronts/upwelling etc.
- Animals should never be fed.
- Swimming with dolphins from a boat is not currently considered an acceptable activity in the UK. When done badly it can lead to boats chasing animals around trying to get swimmers close to them.
ii). Species specific codes of conduct applicable to Cornwall and the UK.
Duncan Jones, Marine Discovery Penzance, UK.

Species-specific codes of conduct

Harbour porpoise
- When first sighted the boat should be gently slowed down with no erratic direction change.
- If another boat is already in the area then the arriving boat should stay at least 200m away. There should be no more than two boats waiting at 200m.
- The operator should establish the activity in which the porpoises are engaged and the distance from the boat before taking any further action.
- Particular care should be taken if calves are present.
- If sighted more than 100m from the boat then approach the area at a slow, no wake, speed. Care must be taken because porpoises can cover large distances under water and make sudden direction changes so can pop up anywhere!
- If within 100m the boat should be in neutral.
- Patience and a calm quiet approach usually provide the best encounters.
- If around porpoises do not put your boat in gear without knowing exactly where they are or unless you are certain they have left the area.
- There does seem to be a collision risk with porpoises despite their general tendency to avoid approaching boats. Whether the risk is from fast moving boats or erratic boat movements in the vicinity of animals is unknown. When travelling in areas porpoises frequent, boat speed should be reduced to 10 knots or below and erratic direction changes avoided.

Dolphins (grouped but with some special considerations for certain species)
- When first sighted the boat should be gently slowed with no erratic direction change.
- If sighted more than 100m from the boat then approach the area at a slow, no wake, speed. The Seawatch Foundation recommends – “If you sight dolphins at a distance, make forward progress maintaining a steady speed, slowing down to six knots or less when you are within a kilometre of them.’
- If another boat is already in the area then arriving boat should stay at least 200m away. A maximum of 2 boats should be at 200m.
- The operator should establish the behaviour and distance of the dolphins before any further action is taken.
- Particular care should be taken if calves are present.
- Dolphins should never be chased at speed – sometimes you just have to be content with distant views.
- Boats should not be driven directly at dolphins: they should be approached from the side and at an angle.
- Sometimes dolphins will come over to a boat. It is usually very obvious when they do this. They will make a very obvious direction change towards the boat. If they approach from the side and are heading in the same direction the boat is heading then a steady course and slow steady (six knots or less) speed can be maintained as they may decide to engage the boat and bow ride (ride along with the boat in its pressure wave). Once they disengage and move away they should not be pursued.
- A boat should never be driven through a group of dolphins in an attempt to make them bow ride. This risks injury or death, and will definitely cause disturbance, thereby breaking all codes of conduct.
- If dolphins move away as a boat approaches this is usually a reaction to the presence of the boat and re-engagement should not be attempted.
Bottlenose dolphin addition

Inshore pods of bottlenose dolphins spend their time closer to the coast than most species. In Cornwall the inshore pods are generally within one mile of the shore. This behaviour means they are much more regularly in the presence of commercial, pleasure trip and whale watching boats, so are subjected to regular disturbance from noise and interaction. Therefore their natural behaviour is affected and altered by human contact much more than other species. Due to these issues there are a few extra things that must be considered. The number of other boats in the area should be assessed together with the level of interaction that has already occurred between a specific group of animals and humans. Sometimes it will be best to observe from a distance and move away. Behaviour when approached should be carefully monitored. In particular, surfacing rate when first observed compared to surfacing rate as the boat approaches. If dolphins are exhibiting relaxed subdued behaviour then sit further off than you normally would - certainly outside 100m. Due to their regular close proximity to vessels they are well aware of boats and it will be very obvious if they choose to engage with you, or equally choose not to.

Risso’s dolphin addition

These dolphins visit coastal areas at certain times of year when foraging is good. They travel and behave in a different way to other species and this must be considered. Usually when travelling they will be spread over a wide area so pods of 2-6 animals will be found together. In the daytime we usually observe them engaged in slow travelling or relaxed socialising. It is very important that this resting behaviour is not regularly disturbed. Visser et al. [2011] observed that reduced resting rates could have negative impacts on the build-up of energy reserves and ultimately on reproductive success.

Minke whale

- When first sighted the boat should be gently slowed down to 6 knots with no erratic direction change.
- If sighted more than 100m from the boat then approach the area at a slow no wake speed.
- The operator should establish the behaviour and distance of the whale before any further action is taken.
- Once in the area of the whale sit and watch and enjoy the encounter. Efforts to get closer than 100m should not be attempted as this is likely to affect behaviour.
- Patience and watching from a distance can often lead to closer interactions as the whale may approach closer to the boat. If so, the boat should remain still and in neutral.
- An experienced operator can sometimes pick out feeding patterns and advise where to look ready for the next surface.

Basking shark

All boat operators should follow the Shark Trust’s Code of Conduct for basking sharks.

Additionally I would recommend considering the following points:

- When in an area where basking sharks occur, boat speed should be kept down to below 10 knots and in known feeding areas six knots. A good watch should be kept. Basking sharks are often feeding just below the surface and are incredibly vulnerable to boat strike. In the area we operate basking sharks have been sighted all the way along the coast from Lizard Point around Lands End and on up the coast. To travel at speed in this area when sharks are being sighted is to risk injuring one.
- When first sighted the boat should be gently slowed down with no erratic direction change.
- If sighted more than 100m from the boat then approach the area at a slow, no wake speed.
- The operator should establish the behaviour and distance of the shark before any further action is taken.
- Most encounters with basking sharks occur when they are feeding at the surface. It is important that this feeding is not disturbed. If a boat drifts closer than 100m or finds it is closer than 100m when the sharks are first sighted care should be taken.
• Where there is one shark there are often more. Care should be taken not to disturb other sharks in the area while watching the initial shark spotted. Operators have been seen running over one shark while their attention is fixed on another by observers on Gwennap Head carrying out a study for the National Oceanographic Centre, Southampton.

Swimming with basking sharks
The code of conduct below is the one set out by the Shark Trust, developed in conjunction with Colin Speedie (who runs the WiSe scheme):
1. Do not try to touch the sharks.
2. Maintain a distance of at least 4m from each shark and be wary of the tail.
3. Groups of swimmers should stay together and ideally remain at the surface
4. Restrict the number of people in the water at any one time
5. Take plenty of pictures but avoid flash photography which can scare the sharks. Photograph any characteristic features which may help re-identify the shark in the future
6. Do not use underwater propelled devices.

There are a couple of points I would add to this based on my observations:
1. None of the boating codes should be broken in an effort to put swimmers close to a shark.
2. Swimmers should not swim directly towards a shark and in particular not create lots of splash (this has been seen to cause sharks to stop feeding and move away). We have witnessed this happen on a number of occasions.

Grey seal
• Grey seals are most at risk of being disturbed when they are hauled out on the rocks. A distance of 50m must generally be kept from seals on rocks and their behaviour constantly evaluated. At some ‘haul out’ sites this distance should be increased to 100m or even 200m. The operator should know the appropriate distance for appropriate sites in their area. Certain haul out sites are more susceptible to disturbance due to less exposure to boat traffic.
• If a hauled out seal’s head comes up and it looks in your direction you should move away slowly and carefully because the seal has already been disturbed. Going any closer will cause that seal to go in to the water and could lead to injury, the loss of a pup in the case of pregnant females and over time a change of habit so that the haul out site is no longer used.
• High boat wake can wash seals off rocks. When in the vicinity of seals hauled out, a no wake speed should be maintained.
• If one boat is already near a haul out site then the second boat should remain 150m to 200m away until the first craft leaves. Consider the effect the first boat has had on the seals before approaching.
• If seals are sighted in the water, slow down carefully and keep a steady course.
• Around colonies and offshore haul out sites, consideration should be given to seals hauled out on rocks or in caves. Noise should be kept to a minimum and distances with hauled out seals observed.
• Do not steer a boat directly at seals in the water.
• Caves where seals haul out should not be entered. These represent very sensitive places and are used for resting, moulting and pupping.
• Seals should never be scared back into the water to allow swimmers to snorkel with them.
• Seals should never be fed to encourage them to come close to boats or in to harbours.
Leatherback turtle
- When first sighted the boat should be gently
  slowed down with no erratic direction change.
- If sighted more than 100m from the boat,
  approach the area at a slow, no wake speed.
- Never steer a boat directly at a turtle.
- In our experience the quieter you are the more
  likely you are to see a turtle.
- Noise and a fast approach will almost always
  cause a turtle to dive and leave the area.

Future developments
As stated earlier, all the codes of conduct and
accreditation schemes rely on operators adhering
to them. There is currently no agency or group
monitoring whether codes are followed, or even
whether accredited operators are following
guidelines. If codes of conduct are to be taken
seriously and accreditation schemes are to carry true
meaning, then this area needs to be developed.
Possibly the easiest way for this to be achieved is via
a mystery shopper style scheme, although how this
would be funded is a potential stumbling block. Also
choosing the mystery shopper would be difficult.
It should not be a person with an affiliation to any
NGO as they need to be neutral. It would also need
to be someone with experience running a wildlife
watching boat, preferably as a skipper. Anyone
regulating the industry must fully understand all
aspects of it. One possible solution is to ask operators
in a scheme to contribute towards the cost of set-up
and management. A small contribution from every
accredited operator could go a long way.
Furthermore through carrying out this study and
trying to create a detailed species specific code of
conduct I have realised the depth of the subject.
With each encounter there is a large range of
variables that come in to play. This has led me to the
conclusion that it might be better to simplify things
and create an ethos / knowledge based code that
skippers might agree to follow and then educate the
public about.
A carefully worded simple code could be used
to help the public more widely understand both
the importance of watching animals without
disturbing their behaviour and to recognise when
animal interactions are being managed responsibly.
Operators could work together to create the
code, which could be developed into a leaflet,
a poster and even a phone app. This would then
be displayed on boats, discussed during trips and
ultimately, taken away by the passengers.

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About Whale Watching Panama

Whale Watching Panama run 1-5 day custom whale & dolphin watching trips to the Pearl Islands. Panama is one of the only places in the world blessed with humpback whale migrations from both the Southern and Northern Hemispheres. During the Southern Hemisphere humpback whale migration, July-October each year, we have several thousand humpbacks returning to Panama to breed and give birth, resulting in sightings on 99% of tours.

Introduction

The aim of this initiative was to educate local fishermen in the Pearl Islands, Panama in responsible whale and dolphin watching.

The need for action arose when we observed mishandling of boats around whales. We noted how the whales altered their behaviour to avoid boats, only resuming what they had been doing when the offending boat left the area. It became very clear to us that education was necessary to preserve and protect a positive relationship with the humpback whales who spend four months in our waters. By educating and encouraging responsible boat handling among the local fishermen, we hope to promote a positive relationship between whale watching boats and cetaceans. By dissuading boat owners from chasing and harassing whales and dolphins, we should all benefit, as these animals become more comfortable being observed and allow us to watch and appreciate them expressing their natural behaviour.

Background:

Contadora is the only island in the Pearl group, with a steady influx of tourists. It also has the only public airport and is served by a daily ferry service from the country’s largest urban area, Panama City, 40 miles north. The Pearl Islands are mainly populated by descendents of escaped Afro-Caribbean slaves, used by the Spaniards to harvest (and almost wipe out) the pearls that were found in abundance in the islands. These Afro-Caribbean populations are all of very low income and mainly subsist from fishing and the provision of small services within their own communities on nearby islands. All the local fishermen who offer whale watching tours from Contadora live on nearby Saboga Island and travel the few minutes between the two islands in their local style ‘panga’ boats, before waiting on the beach where the ferry arrives to tout for tourists to take their tours.

There has traditionally been some discrimination of the local population, referred to as Sabogans by the wealthy Panamanians who have vacation homes on Contadora Island. Contadora has been the playground for the rich and famous for many years. Many wealthy and politically powerful families in Panama have vacation homes on the island and come out on their yachts for weekends and holidays. The Sabogans have made up their principal workforce for many years, employed in construction and also as gardeners, maids and cooks. They are rarely afforded much respect by the homeowners and as a result, tend to keep to themselves and view any foreigner on the island with distrust.

A few of the local fishermen handle their boats very carefully and intuitively respect the whale’s behaviour during encounters. However, the majority of locals will zoom up at high speed, literally on top of the whales - putting both themselves and the whales in danger. We have also seen locals approach whales at high speed, and then when they are very close, allow tourists to jump into the water with snorkels, to swim with the animals. This is extremely dangerous for the tourists and detrimental to the whales. No environmental education is provided to the tourists, in fact most tourists do not speak the local language (Spanish) and none of the local fishermen speak any other language.

Our method to bring about change:

We have used gentle reminders and one-on-one conversations with the local fishers to inform them of local whale and dolphin watching guidelines, emphasising their own responsibility for protecting and respecting our local ‘treasure’ - namely the fact that we are blessed with an abundance of humpback whales in close proximity. Due to the history and previous disrespect shown to the Sabogan community, we felt it very important to approach the issue in a very gentle and respectful manner. Coming on strong, telling them they are wrong and lecturing them in how they should drive their boats would never work with these proud men. Particularly
coming from a white, American woman. I have been operating whale and dolphin tours in the Pearl Islands for four years now and have developed friendly relationships with a number of Sabogans. One in particular, Pedro, is an older gentleman who is very relaxed and handles his boat very respectfully around whales and dolphins. Many of the other boatmen respect him. We have enlisted Pedro to help us to educate and speak to the others who display a lack of caution when boat handling around whales.

When we have witnessed examples of disrespectful and dangerous boat handling, we have taken photographs. While at sea we have also spoken to the relevant captains and asked them to increase their distance from the whales, travel parallel to the animals and allow the whales to decide to come closer or not. When we see these same captains back on land, we take time to talk to them, emphasising the huge bonus we have as a community in having whales coming so close to the islands. We gently explain how important it is to protect our good fortune, by handling the boats and approaching the whales in a respectful manner. We stress that when this is done the whales respond positively, by staying nearby and even coming closer to the boats.

Results:
We have noticed an improvement in the boat handling of the Sabogan fishermen that we have spoken to, although, we can’t be sure they are continuing to handle their boats so carefully when we are not around to see it! We are working to find a long-term, sustainable manner of encouraging the locals to continue the practice of responsible, respectful, whale watching when there is not a ‘watchful eye’ upon them. We continue to work with the community to instil a sense of pride and guardianship over the whales, to protect the sustainability of our industry for the future.

Conclusions:
When we first started this initiative we hoped that attitudes among the locals might change more quickly. We found however, that encouraging behaviour change is an ongoing and slow process. We first had to build the relationship and earn respect from the locals, who initially just viewed us as competition. We now find we are able to refer clients to those locals who practice responsible whale watching, as some tourists are looking for a cheaper, or shorter tour than those we offer.

We have found that the local Sabogans (and throughout Panamanian culture), people tend to focus on the here and now, rather than think about the future. We also discovered that many local fishermen are afraid to say ‘no’ to tourists and try to give them what they want, even if it is harmful to the whales and dolphins. Convincing a local to tell a tourist they can’t move their vessel closer to the whales, or leap into the water directly on top one, is not easy. They are wary of displeasing their customers, which could result in not being paid and/or losing any tip money. We are therefore dealing not only with educating the local community, but shifting several deeply instilled cultural beliefs and harsh economic realities.

This is an ongoing project that we will continue to work on with the Sabogan fishermen. Next whale season we will be creating Responsible Whale Watching stickers that we will give out to those locals who have proven themselves responsible in their boat handling around whales. We will also create and put up posters to encourage tourists to look out for the whale watch boats that display this Responsible Whale Watching sticker.

We believe it is extremely important to work respectfully with the local community who have always lived in the area and may view a new whale watch operator as an outsider and a competitor. It is important to enter a new market humbly and respectfully - much as you would approach a whale on one of your tours.
b). How valuable was the trip as a learning experience?
Since the 1950’s, whale watch trips are the primary way that people come into contact with whales in the wild. Over 13 million people go whale watching every year. Imagine if some of those people got off the boat and made a small change in their lives to help protect whales and our planet. I feel close attention needs to be paid to the education on the boats so that people are leaving these trips with something more than a photographic opportunity. People could benefit by learning about whales, feeling a greater connection to nature, and developing a sense of environmental responsibility during a whale watch trip. I want an education programme that accomplishes this goal. I don’t know whether it’s due to their size, or their majesty, but I think whales have the power to inspire people. This change rarely happens through passive observation. When the organisation and presentation of the trip are based on solid information, educational theory and expertise from the naturalist, exposure to whales can create dramatic effects - changing people’s lives. For a passenger, that might mean thinking about their seafood choices, using less toxic chemicals, or undergoing a more general shift in how the environment is perceived.

I developed the education program at Cape Ann Whale Watch over thirteen years ago and have been tweaking it ever since. For my Master’s degree, I studied various learning theories and applied them to a four-hour whale watch experience. My thesis was a curriculum for a whale watch trip that could be implemented by other naturalists and educators. There are three key aspects of the programme, which differentiate us from other whale watching excursions. These are interns and volunteers, teaching tools, and interaction with educators.

**Interns and volunteers**

Internships are increasingly popular with college students and are useful for a variety of reasons. They help students gain experience, decide whether the field is something they want to pursue further, provides an outlet for their knowledge and allows them to sharpen their skills. Meanwhile, companies gain an enthusiastic, cost effective workforce. We usually have four interns on every whale watch trip, plus a naturalist, making a total of five educators. Interns come from a variety of backgrounds including, biology, psychology, French, art history, economics and philosophy. The training is on the job!

**Teaching tools**

Teaching tools are objects, papers and other devices that aid in education. These can be thought of as entry points, which are ways to open up conversation, engage and entice people. By creating teaching tools that incorporate multiple intelligences and senses, every audience member has the opportunity to engage in learning about whales.

**Interactions with educators**

In many cases, whales are not found within five minutes of leaving the dock. Travel time to the animals can be up to an hour or two. This provides an excellent opportunity to interact with and educate visitors. With teaching tools in hand, educators can gather small groups of people to explain concepts, answer questions and help facilitate visitors’ emotional and intellectual connection to the whales. The interaction gives people the opportunity to ask questions about specific topics that they are interested in. By having small groups, or one-on-one conversations, everyone is given the opportunity to maximise their learning.
How are these aspects manifested?
We divide the whale watch trip into five phases, based on what is happening and where visitor interest and engagement might be. These three components are woven into our trips in different ways, depending on the phase. Following is a brief description of each phase and how we use these components.

Phase 1: Reservations to dock talk.
This first phase of the trip is the “anticipation of the event.” This occurs from when the visitors sign up for the trip until the boat leaves the dock and is characterised by excitement and possibly apprehension. It is a time where people might seek information, so having it available is important. This phase ends with the dock talk or introductory talk, which includes information about safety, where we are going, what we might see, and the themes that will be presented throughout the trip.

Phase 2: Heading out to see whales.
For us in Massachusetts, this takes one hour on average. During this phase, a substantial amount of material can be presented because interest in learning is high. Information during this phase of the trip can be presented using hands-on teaching tools with visitors in small groups. This phase of the trip is where a foundation will be laid for information that will be presented more formally upon reaching the whales. Our teaching tools include:

- Baleen and teeth
- A 3-D model of Stellwagen Bank
- Close-up photos of whales
- Songs of the whales

Phase 3: Watching the whales.
This phase is the ‘on-site’ experience, where information and interpretation play a formal role and are presented, in our case, over the PA system. Themes are discussed in depth while visitors are observing the whales in their natural habitat.

Phase 4: Returning from watching whales.
During this phase it is important to reinforce, on a more personal basis, information that was given while whale watching. It is also important to respond to passenger questions and encourage their further study of whales and the ocean environment. Some teaching tools we use are as follows:

- One station set up for people who want to ask questions, or purchase souvenirs.
- Plankton (from the day) in discovery scopes.
- Humpback whale tail matching game.
- Entanglement and marine debris teaching tools.
- Marine animal toys that children interact with on the deck.

Phase 5: Wrap-up and follow-up.
Finally, there is the ‘recollection’ phase. Our priority during this phase is reinforcing the themes from the trip, as well as telling visitors what we hope they will do with their recent experience and new knowledge. Providing opportunities for people to follow-up and stay connected has never been easier with social media outlets like Facebook, Twitter, websites and blogs.

Evaluation
In a survey completed in 2002, visitors were asked to rate the importance of a variety of aspects of the whale watch trip on a scale of 1 to 4. On average, 78% of the 4832 respondents answered the questions. Commentary was rated the most important aspect, with an average score of 3.66. The interaction with education and teaching tools were the second most important aspect, with an average of 3.48 and 3.44. Most recently, I analysed and compared Trip Advisor comments left by visitors for Cape Ann Whale Watch and a competing company, as a way to evaluate our education program. Below is a chart of the percentage of comments written about different components of the educational programmes. It demonstrates the advantage our education programme gives us, over our competitors.
The education programme has contributed significantly to Cape Ann Whale Watch’s reputation and therefore the commercial aspects of the business. It separates us from the competition (one of three companies in the same small town). People often come to CAWW specifically because of the education programme onboard. One passenger on Trip Advisor wrote, “choose Cape Ann Whale watch because it gives you the most information about the whales while you are out there. Educators come around to you on the way to and from the whales to give you a much more educational and interactive experience than the other boats out of Gloucester.”

Change occurs one step at a time. I would encourage other whale watch operators to adopt this education programme and recognise that visitors are looking for this level of education. It will increase revenue, business, and make a difference for the whales and dolphins we all want to protect.

Finally, I would love to see a links developed between whale watch companies that take on this programme, perhaps as part of the Planet Whale Partnership. If one of my visitors wants to go to Spain to whale watch, I would like to be able to suggest they go with a particular company because the education philosophy would be similar. I think it could benefit all of us. How exciting it will be to have partners working around the world all towards a common goal—saving the whales. This time for good!

Acknowledgements

I would like to thank the interns and naturalists over the past 14 years who have contributed to the creation and execution of this education program.

References

Introduction

Environmental education is an important mechanism for directing the attention of the general public towards the conservation and preservation of the natural environment. The objective of this study was to analyse the development and effectiveness of the environmental education programme we have put in place since 2006. This programme aims to raise awareness of the importance of protecting and conserving marine mammals and their habitats. We believe it is crucial for whale watch operators to explain to their passengers that we all have a responsibility, not just to maintain, but also to restore, the marine environment. Environmental education activities have the additional benefit of improving the company’s image - although in our case, this is not our primary motivation, as we believe education is a fundamental element of any ecotourism activity. It can, however, also generate a number of other benefits:

- Economic benefits: We believe that the development of environment education is commercially beneficial to our business. The number of students participating with Turmares increases each year, and students regularly encourage their families and friends to go whale watching with us too. In addition, our educational programme has resulted in increased interest from specialist environmental groups and individuals taking trips with us, as a result of word of mouth recommendations from previous students and passengers.
- Marketing tools: Online marketing is based upon content related to our research and educational programme. The interest from people who interact with us, via the web, social media and blogs, generates further passenger bookings.
- Positive impact on whales and dolphins: We believe in increasing knowledge and awareness in order to encourage the public to understand the importance of protecting wildlife. Our passengers are informed about conservation issues and the importance of cetaceans as part of the marine food chain.
- Positive impact on staff and customers: Some of our staff are former fishermen who viewed the sea just as a source of food. Now they appreciate the need to preserve marine ecosystems for future generations. We influence the environmental awareness of our customers by using simple examples, such as challenging people to think about whether an aquarium pool or the Strait of Gibraltar is a more appropriate place for dolphins to live.

Method:

Our environmental education department took a holistic approach to educate tourists about marine issues, marine mammals, and seabirds. A key aspect of the method used revolved around the concept; ‘think globally, act locally’. We focused both on local facts (such as fishing, geology and ocean currents) and on well-known global issues. Our aim was to reach all passengers with this information and encourage them to spread the message to their wider communities in order to create a network of awareness.

Specific educational initiatives we undertook included:

- Consistent scientific method (didactic) employed for student groups gathering information before, during and after whale watching trips.
- Beach campaign based on marine mammals, aimed at raising awareness amongst children during their holidays on the beaches of the Costa del Sol.
- Presentations of our own (and collaborative) scientific work, sightings data, opinions, photos and short films, on social media, blogs, web pages, printed magazines and video productions.
- Public conferences discussing cetaceans and our scientific work.
- Encouraging direct contact between scientific guides and passengers during whale watching tours, avoiding use of the microphone for prepared speeches as much as possible.
- Promoting an anti-whaling campaign, by distributing postcards to passengers.
Results:
During 2009-2010, 332 tourists were surveyed using questionnaires to determine their level of satisfaction with the environmental education we provided. The majority of customers (51%) felt that the environmental education information they had been given was ‘good’. 30% responded they thought it was ‘very good’, 15% said they thought it was ‘average’, 3% felt it was ‘poor’ and just 1% felt it was ‘very poor’. During this period, informative handouts were translated into several languages (Spanish, English, German, French and Italian) and also tailored to different age groups (children, teenagers and adults).

Our wider results, between 2006 to 2010, show an increase in the total number of visitors, and an increase in the number of specific educational groups. The number of environmental educators and volunteers also increased from two of each in 2006 to five of each in 2010 (high season). Amongst the specific educational groups we saw a clear increase in the number of university and naturalist groups. This increase is related to the expansion of collaboration between Turmares and universities/naturalist groups in the region and beyond.

We are still working on the 2011 and 2012 environmental education results, but we can already report some interesting findings: We started with fifty educational groups in 2006 and this has grown to about ninety groups, (involving around 2400 students) in 2011. In addition, between six and ten university groups attend every year, (involving 240 to 400 students). Many of these are repeat customers both between and within each academic year.

Conclusions:
• Educational groups: In 2010 the members of educational groups accounted for 25% of the total number of whale watchers;
• Growth: The number of university and naturalist groups have increased annually;
• Overall: The results obtained in this study show the increasing importance of environmental education carried out by Turmares;
• Questionnaires and didactics: We will continue with pre-trip and post-trip questionnaires and didactics units for student groups in order to continue to evaluate our educational programme.

From a commercial perspective, we would strongly recommend other whale watching businesses develop extensive environmental education programmes as we have done. Effective environmental education has helped cultivate the loyalty of our customers, encouraged repeat business and generated advertising our company worldwide, both through word of mouth and online. It reflects well on a business if it collaborates with, and allows the participation of, scientists and specialists working in relevant fields. It also enhances the customer experience. We believe that whale ‘watching’ does not adequately describe our trips. Our offering is far more immersive and interactive for participants - leading to a great trip for them and a greater collective understanding of the need for conservation of marine wildlife.
c). How well did the trip meet your expectations?
Case study

Whale Watch West Cork, Ireland

Managing expectation in whale watching customers.
Nic Slocum, Whale Watch West Cork, Ireland.

Introduction

With the huge growth in whale watching operations around the world, much emphasis, quite rightly, is placed on the welfare of the wildlife we go out to watch. We know that whale watching operations in many, if not most, parts of the world are having a negative impact on cetaceans; possibly influencing their social interactions, breeding behaviour and ability to feed. Indeed damage may extend to whole ecosystems involving both birds and fish in addition to the target whale species.

When an operator locates cetaceans, the emphasis is frequently on achieving close encounters for the longest duration possible. Even in those countries that have clearly defined protocols for cetacean/viewer interaction, these protocols are frequently flouted. Both the customer and the operator drive this inevitable pressure on cetaceans and other wildlife. Pressure from the operator can be managed through competent, responsible boat handling and well trained staff, adhering to a clear code of conduct for the interaction of boats and marine wildlife - designed down to the species level where appropriate. Managing pressure created, usually unwittingly, by the customer is more difficult.

Managing expectation before departure is the approach we take to reduce pressure created by customers who have unrealistic expectations of what they may, or may not see and the distances at which animals may be encountered.

Our rationale for this approach is as follows:

a) If customers are given a more realistic expectation of what, where and why they may, or may not see, cetaceans, they are likely to be more open to the wider experience of enjoying scenery and other marine wildlife.

b) If customers enjoy the trip from a more holistic point of view and understand the reasons that cetacean sightings vary in quantity and quality, they are likely to be more receptive to other important marine conservation information.

c) If customers have an informed understanding of the wider marine conservation message then are more likely to pass this on to their family and friends.

Objectives

This case study was designed to answer two questions:

1). Does careful management of customer expectation, before departure and during the trip, result in a better customer experience when whale species are NOT sighted.

2). Could we develop an expectation management briefing that would benchmark favourably against other operators, or provide a basis for the improvement of customer expectation management within the whale watching community?

Approach

It was made clear to every customer who came on board that they were all taking part in an ongoing study into ‘better management of customers in regard to whale and dolphin watching operations in Ireland’. This rather vague explanation was used to try and prevent customers who took part, from forming pre-conceived ideas that might influence their answers. Questions were posed verbally and through short written questionnaires. Children under 15 years of age were excluded (although we had no control over their involvement in answering questions posed to their parents).

Before any pre-trip briefings we asked all customers on board to signify those:

a). WITHOUT experience of whale watching

b). WITH experience of whale watching

Customers with experience of whale watching provided a useful control group in terms of how well expectation was managed in other whale watching destinations. This group were asked at the beginning of the tour:

- Where had they been whale and dolphin watching previously (country and destination)?
- Whether they had sightings of whales/dolphins on that tour (their last tour if more than one tour had been made)?
- Whether their expectation had been well managed prior to this previous tour?
However, those in the category without experience of whale and dolphin watching were our primary experimental cohort. On Mondays, Wednesdays, Fridays and Sundays, those without prior experience of whale watching were given our detailed on-board ‘expectation management’ briefing. While on Tuesdays, Thursdays and Saturdays they were given no ‘expectation management’ briefing at the outset of the tour. Adjustments were made if weather prevented a tour from taking place, but in any seven day period over which tours took place, on at least four of those days customers with no previous whale watching experience received a briefing, and on three of those days they did not.

All other aspects of our tours were adhered to as normal, including a detailed review of all marine mammals spotted (together with supporting images), an explanation of the distances over which marine mammals can range and the various influences on marine mammal behaviour, along with our commentary on the geography and history of the area.

On all tours first-time whale watch customers were asked to fill in a short questionnaire during the last twenty minutes of the tour. This requested the following information:

- Did you see whales, dolphins or porpoises during your tour with us? (Yes/No)
- What was your expectation of seeing whale species prior to the tour? (10% - 20% - 40% - 60% - 80% - 100%)
- Was your expectation managed well on this boat today? (Yes/No/Don’t Know)

Following completion, it would be explained to those groups not receiving the expectation management briefing, that this would normally be given. The purpose of the study would be outlined and they would be thanked for providing valuable results to help us improve expectation management protocols in Ireland.

During 2012 spanning the months June through August, those without experience of whale watching comprised 354 people, while those with experience of whale watching comprised 189.

Results

Those with experience of whale watching previously had been on tours predominantly in the Americas, Europe or Australia. Of the 189 people in this cohort, two had been to Sri Lanka and four to Argentina. The remainder had been either to Scotland, Azores, Canada, New England or Australia. Within this group, 70% had seen whale species on their tour and over 165 of rated their expectation prior to the tour at 60%. Two people rated it at 100%, four people at 80% the remaining people in this group rated their expectation of seeing a whale at lower than 60%. Of this group, 63% considered that expectation was managed well, 10% did not know and 27% considered expectation was not managed well prior to departure.

There were limitations to collecting accurate data. In some cases it had been many years since customers had been whale watching, thus accurate recall of their feelings at the time could be hazy.

Those without experience of whale watching previously comprised 354 people of which 187, or 53% of the total, were given a detailed expectation management briefing before departure (table 1). Those first-time whale watchers that were not given an expectation briefing, numbered 167 people, or 47% of the total (table 2).
Table 1 - Customers receiving expectation management briefing

Results for customers who received the expectation management briefing and saw whales on their tour
- 92% considered that expectation had been managed well before the tour
- 6% considered that expectation had not been managed well before the tour
- 2% did not know if expectation had been managed well before the tour

Results for customers who received the expectation management briefing and DID NOT see whales on their tour
- 83% considered expectation had been managed well before the tour
- 12% considered expectation had not been managed well before the tour
- 5% did not know if expectation had been managed well before the tour

Summary
For those customers who saw whales during their tour, whether they had received an expectation briefing or not, made little difference as to how they answered the question ‘Was your expectation managed well on this boat today’?

However, for those who DID NOT see whales, responses to this question were significantly different. Those who received an expectation management briefing but didn’t see whales, rated their expectation ‘well managed’ in 83% of cases. For those who neither saw whale species, nor received an expectation management briefing, only 49% considered their expectation had been managed well on the boat that day.

Significantly more customers (28%) were inclined to rate expectation management as ‘not well managed’ when they had NOT seen whales than when whales had been present. Where they had seen whales only 5% responded ‘not well managed’. Amongst the group that neither received an expectation management briefing, nor saw whale species, 23% of customers responded ‘don’t know’ to the question on whether expectation was managed well. It is possible that some of these customers would have rated more negatively (i.e. responded ‘not well managed’), were it not for the general commentary on the other wildlife seen during the tour.

Table 2 - Customers receiving NO expectation management briefing

Results for customers who DID NOT receive the expectation management briefing but saw whales on their tour
- 88% considered that expectation had been managed well before the tour
- 5% considered that expectation had not been managed well before the tour
- 7% did not know if expectation had been managed well before the tour

Results for customers who DID NOT receive the expectation management briefing and DID NOT see whales on their tour
- 49% considered that expectation had been managed well before the tour
- 28% considered expectation had not been managed well before the tour
- 23% did not know if expectation had been managed well before the tour

Conclusions
It is probably to be expected that customers who manage to see whales during their tour would experience something of a ‘feel good factor’. They have come on a whale watching tour and seen whales; therefore their basic expectations will probably have been met. This is likely to have over-ridden any feelings that they had about the briefings they may have been given before departure. The results support this, as there is little difference in ratings where whale species have been sighted.

We do not know what other operators say as part of their expectation management prior to tours, but our results show we achieve a higher rating for our full expectation management protocol than other operators in those areas visited by experienced whale watchers. We would imagine that expectation management would be fairly sophisticated in the destinations visited by our experienced whale watchers. This would indicate that our expectation management protocol benchmarks well against other operators and may be better at managing expectation.
### 1. Expectation Management Briefing

"Ladies and gentlemen I want to start by talking about expectation.

What might we, or might we not, see when we go out today?

Please remember these are wild animals and it is not a zoo or a dolphinarium. These animals are free to roam wherever they like and are not constrained in any way. Neither would we want them to be.

It is possible to go out and not see animals of a “Whaley” nature.

We have a sighting record of X% taken across the season but that does mean that we go out X% of the time and fail to find species that we would reasonably expect at this time of year based on previous years.

Many factors influence where they may be. Food source, tidal conditions, sea conditions, boat noise... you name it, just about everything may influence animal behaviour and whale species are no exception.

Please also remember, although we cover a large area of sea when we go out looking it is a small fraction of the area that these animals are capable of covering...in a remarkably short time.

We do of course approach this in a reasonably scientific way. We go to all those areas which we know are favourite haunts and where they are most frequently sighted during recent days/weeks.

Please remember that at all times we adhere to a very strict code of conduct and we will always allow animals to come to us, we will never pursue them.

Marine wildlife that we would expect to encounter at this time of year, not necessarily all at the same time, would be....

Those species we have seen during the last few days include..."
d). How well did the trip minimise its impact on the marine environment?
The importance of correct propeller maintenance for commercial cetacean viewing boat operators. Nick Davies, Hebridean Whale Cruises, UK

Introduction

There are many reasons why vessels undertaking commercial interactions with cetaceans have to follow strict guidelines, usually in the form of a voluntary or legally binding code of conduct. However, very few of these codes mention propeller maintenance. Therefore, my aim in this case study is to outline the basics of this subject without overloading the reader with confusing scientific data.

Cavitation: the basics

Cavitation occurs when the low pressure generated by a propeller causes thousands of tiny bubbles to form in the water. These bubbles burst with a pop just like a balloon and are the major source of noise from boats under power. A sudden change in thrust either forwards, or even more dramatically astern, causes increased cavitation and noise.

Cavitation occurs when a spinning prop causes tiny air bubbles to form and these bubbles cause the noise, so trying to keep the number of bubbles to a minimum is key. Smooth prop surfaces and even trailing edges are essential.

There are many factors that influence the volume of cavitation even before correct maintenance:

- Hull design
- Type of anti-fouling used
- Position of propeller/s
- Sea state
- Speed

All of the above will influence the flow of water entering a propeller. The smoother the flow of water, the less cavitation will occur.

A guide to keeping your propellers as quiet as possible

All props are noisy to a certain extent, but there are some easy steps that can be taken to minimise noise:

- Always throttle-up slowly and steadily, to gently increase the flow of water through your blades and minimise cavitation.
- Avoid going astern at all costs as this dramatically increases noise pollution!

- The other most important thing you can do is to inspect your props regularly. Any dents, holes, bent blades, electrolysis or marine growth on any part of your props will increase the noise output substantially.

Most prop repairs will need to be solved by a professional, but other problems may be reduced through the application of products such as Prop Armour, which claims to be non-toxic and will reduce any marine growth. Unless you can clean props regularly yourself, this is a good option. Obviously, not all operators can inspect their props regularly, so a non-toxic, anti-fouling system is highly recommended.

To clean props, try to use the least abrasive product available. Good old elbow grease is best – together with an ordinary cloth. If this method is not for you, use either the finest grade of wet and dry sand paper/emery paper, or a green pan scrubber (not one of the metallic pan scrubbers). The smoother the finish the better and if you do this regularly the easier it will be!

Choice of propeller?

If you are lucky enough to be able to choose the most eco-friendly type of prop, you will, I’m sure, be interested to know that most studies agree a five bladed prop with big, wide blades will cause the least cavitation. An alternative option is one of the fairly new composite carbon fibre props, which claim to reduce noise (see conturprops.com for more info).

Other factors that influence propeller noise

There are a multitude of ways that power is transferred from the engine to the prop so I will just cover the most common:

Stern drives - The most important factor to minimise vibration and cavitation is to ensure the shaft is correctly aligned and greased through the stern tube. The engine mounts must also be renewed regularly. Sound dimming/vibration absorbing materials can be fitted directly above the prop area inside the hull.

Z drives - Correct trimming is essential and don’t forget to remove any build up of marine growth around the leg.

Outboards - Again ensure correct trimming and that the marine growth is removed.
Yachts under sail with fixed pitch propellers

Whether the prop is turning or not, it can still cause cavitation at certain speeds depending on hull shape etc, so retractable bladed props are the best ones to use. It is also recommended that even in very light wind conditions yachts actually use their sails as well. It doesn’t take much wind to generate movement and this eases the work the prop has to do.

Basic indications of propeller damage without inspection

When a prop has suffered damage, most skippers will notice a sudden increase in vibrations through the hull. This is usually is twinned with a bump of some kind, if your prop has struck a hard object. Increased vibration can however be caused by a range of different things. If the increase is very noticeable it will almost certainly be investigated. It is the more subtle changes that can easily go unrecognised, but these highlight the need for checks, in case there is some prop damage. One of the tips I have picked up over the years is to pay attention when I am having my regular drink of coffee at my usual cruising speed. If I become aware there is more action in the cup than normal, it may be a sign something is wrong, so I’ll make sure the prop gets checked. It’s worth keeping an eye on other things in the boat, to be able to tell if something is different - a mounted GPS may quiver when revs are increased and even a crisp packet ‘singing’ can be the sort of indication all is not well. At the stern, increased or irregular vortices also indicate potential problems.

Prop(s) running quiet as possible. What next?

I mentioned speed previously and this is an important issue, as the faster the prop turns the more cavitation occurs. But it can also alter the pitch and frequency of the noise emanating from the bubbles. Most operators have target species which use echolocation and communication calls at different frequencies - it is a general rule that the bigger the animal the lower frequency it uses. So if you relate this to approach speeds it is generally considered that a prop will cause the least cavitation at 5 knots or less - which I’m sure no-one would want to exceed whilst encountering cetaceans anyway!

A potential problem can occur whilst trying to locate your target species if you are travelling at more than 10 knots, as this is the speed that most studies suggest can start to effect cetacean behaviour. It may interfere with their foraging or communication, or just be annoying! But I would suggest that any vessels exceeding 10 knots when searching, slow down to 5 knots as soon as any animals are spotted. Many operators have areas that they know target species can often be found in. For the reasons mentioned, it would be good practice to slow down to 5 knots at a minimum of 2kms before reaching this area.

Vessels with more than one propeller

It is essential that all the props are turning at the same speed. Any variation creates different frequency noises that increase the volume and therefore the potential disturbance. Correctly balanced props behave in a similar way to mono and stereo sound-systems i.e. using two speakers doesn’t necessarily double the volume emitted.

How to find out what type of noise/frequency is coming out from your prop(s)?

Unless you speak fluent ‘cetaceanese’ there is only one option, namely a hydrophone with a compatible recording system! You can search the internet and purchase this type of equipment quite easily, but there is one company, based in the UK, (Magrec Ltd, Devon) that will custom build this type of technology to your own budget and requirements. They also do a lot of work (mostly unpaid) for charities like the Whale and Dolphin Conservation Society. It would certainly be interesting to know the frequency your prop is operating at and the frequency range your target animals use.

Summary/conclusions

There is extensive and detailed technical information available on the internet which is worth looking at if you would like to go into this subject further. The difficulty comes with applying it to your specific vessel and the many and varied range of other factors at play. I have therefore deliberately used general terms and easily applicable suggestions for every vessel type.

The physics behind cavitation is quite hard to understand, but if we are using propellers (as opposed to jets), we have a responsibility to minimise the potential disturbance to the animals we are trying to show to our customers. I believe the issue of minimising cavitation should be included in more codes of conduct, because it is probably the loudest artificial noise the animals will regularly hear and feel. It goes without saying that we would like every interaction with cetaceans to be a good one on both sides and prop management will go a long way to improving this!

Acknowledgements

Many thanks go out to Clive Menhenett (Magrec Ltd Devon) for all the help and advice on Marine Noise Pollution not just for this case study, but over the years.

Russell Leaper for his invaluable knowledge on this subject, as Skipper of Song of the Whale I.F.A.W.

Introduction
Arctic Whale Tours recently began to implement improvements to make our operation more environmentally friendly and reduce negative impacts on the ecosystem within our region. We focused on reducing carbon emissions, introducing eco-friendly and reusable materials in all parts of the company and supporting our local community. The reason for this initiative was two-fold: firstly, we were very aware of the fragility of the local environment and wanted to conserve it - it is of course, very important to us to ensure the local marine life is able to flourish. Secondly, we wanted to distinguish ourselves from competitors, through encouraging consumer recognition of our strong environmental ethos.

Method
A number of measures were taken to make our operation more environmentally friendly. These were implemented during our whale watching trips, in our office and in our cafeteria. They were also enforced in the accommodation provided for staff. The measures we aimed to implement were as follows:

- To use locally sourced produce whenever possible (e.g. the fish for the fish soup served on all boat trips could be supplied by one of the local fishing boats in Sta).
- To support the local community, by providing space for locals to sell hand-made souvenirs.
- To enter the process to obtain ‘Blue Flag’ accreditation, to certify our environmentally friendly conduct.
- To introduce more efficient heating, as well as reducing heat loss and switching to energy saving light bulbs.
- To reduce paper waste e.g. by switching the marketing focus to online platforms (new webpage, blog, Facebook page, Youtube channel and new online booking system) and by reducing the use of paper brochures.

Results
The measures introduced were overwhelmingly successful in achieving our aim. An estimated 10,324 paper cups and bowls were saved through the use of re-usable plastic crockery. In addition, by replacing old-fashioned light bulbs with their energy saving equivalents, we experienced an estimated four-fold reduction in energy consumption.

The increased focus on information technology solutions has been highly successful at reducing the amount of paper used. For example, daily information about trips and weather forecasts are now published on our website, rather than in paper format and all bookings are now stored in an online booking system - virtually eliminating the need for paper.

In addition to the savings made to our business, these changes have also had a positive effect on the environment and the local community. We put strict recycling processes in place, so paper, plastic, textiles, metal and organic waste are now separated into various colour coded bags, to be disposed of appropriately rather than going to landfill. Over 400kg of fish (all of which came from local fishermen), was served in our fish soup during this season. This provided an economic boost to the local community, as well as increasing the public’s awareness to the local fishing industry. Local producers also benefitted from the tourism generated by our whale watching trips, as a section of the Arctic Whale Tours gift store was made available for to crafts people to display and sell their hand-made goods. This collaboration was highly successful and is likely to continue.

Conclusion

The measures we adopted earlier this year have contributed to the preservation and sustainability of the environment and helped promote and support the local economy, in the area in which we operate. In addition, our efforts to become more environmentally friendly have not only led to a significant reduction in costs, but have encouraged us to explore innovative ideas to market ourselves online. This has expanded our reach to potential customers and enabled us to offer more updated and informative reports of our trips. We believe that becoming a more eco-friendly business has set us apart from our competitors and helped attract clients who often favour companies with a firm ethical stance. The positive interaction with fishermen and craftspeople from our local community has helped to promote our company and establish a positive reputation.

Finally, by implementing these measures, the staff at Arctic Whale Tours are empowered to protect the environment in which they live and work and feel a greater sense of responsibility to protect the ecosystem of the marine mammals they work with. We believe that as whale watch companies operate on and in, the natural habitat of these animals, they have a responsibility to make a conscious effort to reduce any negative impact. Therefore, we believe that similar guidelines aimed at preserving the environment should be endorsed by all whale watching companies.
e). Emphasis on trip operator’s own research work or support for conservation?
Introduction

Conscious Breath Adventures operate one-week duration live-aboard cruises to see and swim with North Atlantic humpback whales in their winter breeding grounds on the Dominican Republic’s Silver Bank. We are regulated by the Dominican Republic Department of the Interior, as part of management activities for the Sanctuary for Marine Mammals of the Dominican Republic. Swimming with whales is legally sanctioned and managed in only a handful of locales worldwide and only three permits are issued for operators on the Silver Bank.

The Silver Bank wintering and breeding ground for North Atlantic humpback whales, is a remote offshore location (approximately 70 miles from the north coast of the island of Hispaniola). It is difficult and expensive to access and thus out of range of many academic budgets. Consequently there is a dearth of knowledge about the breeding habits of the North Atlantic humpback whales and the majority of research emanates from institutions located near their summer feeding grounds, around the Gulf of Maine. Guests are aboard our boat for a full week in duration. Given the length of time they are in our care, the opportunity for meaningful, in-depth education is far greater than on a typical day, or half-day whale watch. Finally, the opportunity to observe humpback whales underwater, while swimming with them in their natural habitat, is precious and according to many guests, life altering. It also offers a scientific perspective not afforded by surface-based activities.

Why do we support education and research?

Like many whale watch operators and participants, we do what we do because of an abiding respect and affection for the whales. Aside from the fascinating insights into these intelligent ocean species, there is perhaps an indefinable but very real, emotional connection with the animals, shared by guests and operators alike. Few can look directly into the eye of a humpback whale underwater and not be affected by the exchange. As world citizens concerned about the environment and in particular the health of the oceans, we feel that getting to know some of its largest and most majestic inhabitants more closely, can affect a broader change in attitudes towards marine conservation as a whole.

Appropriate watching of cetaceans in the wild can benefit the animals, the watchers and the whale watch operators. As guides and naturalists, operators are the active link between the public and the whales and dolphins, providing the platform and specialised knowledge that allows the former to connect with the latter. We feel that being in this important position imbues the thoughtful and ethical operator with both an opportunity and a responsibility to benefit all. It is common sense that research and conservation efforts are good for the animals and good for business, but operators can’t do this alone. Teaming up with researchers and ‘citizen scientists’ can help create very positive collaborations and effective outcomes.

What is citizen science?

Citizen science has been defined as ‘the systematic collection and analysis of data; development of technology; testing of natural phenomena; and the dissemination of these activities by researchers on a primarily avocational basis.’ But is perhaps more easily understood as being ‘public participation in scientific research’. Citizen science can be practiced in various ways, for example by members of the public gathering data to be analysed by professional researchers, or helping researchers to analyse data of their own. Citizen scientists can also volunteer on formal research efforts, collect data while travelling in remote locations, or gather their own data for projects of their own. They generally work voluntarily, as individuals, groups or networks, frequently in conjunction with professional researchers and their work often emphasises education and the value of scientific research.

As you will see from this case study, these broad definitions of citizen science describe a number of projects that Conscious Breath Adventures supports, participates in and contributes to.
Our contribution to scientific understanding

On our cruises, Conscious Breath Adventures emphasise education, conservation and research. Our philosophy is that anyone who participates in any kind of eco-tourism, either terrestrial or marine, should take away with them more than just fond memories and beautiful photographs. Guests should also go home with a greater understanding of the animals and the environments they are visiting and the threats they face. The following four examples describe how Conscious Breath Adventures contribute to the level of understanding of North Atlantic humpback whales.

1. Photo-identification

Our most significant contribution is through support of photo identification research. The humpback whales of the Silver Bank are, as mentioned, little studied during the important breeding season. However, our staff and guests capture fluke images on an almost daily basis, both above and below the water’s surface, using still and video cameras. The photographs are provided to Allied Whale at the College of the Atlantic, Provincetown Centre for Coastal Studies, Bermuda and to researchers in the Dominican Republic.

A great example of citizen scientists, are the community of humpback whale enthusiasts, known as ‘Flukematchers’ on the photo-sharing site Flickr. This initiative, which utilises crowdsourcing and enables enthusiasts to quickly compare fluke ID photos and make rapid identifications, is driven by Gale McCullough. While, working for Allied Whale in 2010, Gale connected two photos of a humpback taken off the coast of Brazil and Madagascar. The former was taken by a team of researchers in 1999 and the latter, was shot by a tourist and posted online 2001. Recognising the opportunities presented by connecting image sharing websites such as Flickr, with scientific catalogues, inspired Gale to create Flukematcher\(^1\). During each winter season, Conscious Breath Adventures creates and publishes a weekly digital newsletter we call our Cruise Report. This features a selection of the best photos taken each day. Whereas in the past it might be weeks or months before a match could be made and a whale identified, on several occasions during the 2012 season enthusiastic flukematchers were able to identify individual whales from the Cruise Report photos within hours - even though identification was not the initial intent. This was beneficial on several levels. It not only provided timely information on the whereabouts of the identified whales, but enthused and motivated the community of whale watchers and researchers on the north-east coast of the United States. Sharing this type of information via social media, facilitates exponential sharing and (as in our case during the 2012 season), can create a real positive buzz in cyberspace, including increased Facebook postings, shares and conversations, tweets, and a large rise in the number of subscribers to the newsletter.

A more specialised aspect of our identification programme is our underwater photography – particularly of mothers and their calves. Our operations offer us exceptional access to the whales in the water, so we are able to capture fluke photos without having to wait for a whale to visit the surface. This has proved very useful, for example, if a whale is photographed and positively identified with a calf on the Silver Bank, spotters can watch for that same female in the summer feeding grounds and take note whether the calf is still present. This helps create a more accurate understanding of reproductive rate, fecundity and infant mortality. We are even in some cases able to provide the gender of the calf - important information that may not be discernible through traditional observation techniques and which can be added to the life history of the whale immediately.

2. Acoustic recordings

Humpback whales are famous for their mysterious songs, described as one of the most remarkable phenomena in the natural world. In fact, Roger Payne’s first recordings of singing humpback whales triggered the ‘Save the Whales’ campaign of the early 1970’s. As it is the males that sing, primarily on the breeding grounds, it is considered to be a courtship behaviour. Whales from different parts of the world are known to have different dialects, sing different songs, and, as shown by recent research from the Pacific, pick up new songs much like listening to the radio!

On every whale watching excursion our staff carry a hydrophone to listen to and record whale songs on the Silver Bank. Recordings are made available via the audio file sharing website SoundCloud, (a sort of YouTube for sound) and on our website along with dates, times and locations. Unlike the photo identification, this data collection is more informal, but the archived recordings are likely to be of use to researchers in the future. Students at the College of the Atlantic have twice used recordings made by Conscious Breath Adventures in postgraduate studies, and we offer them freely to any interested parties.
3. Citizen-led research
Another great example of citizen science is the ongoing effort of our multiple repeat guest, Jodi Frediani from Big Sur, California. Jodi is engaged in a lengthy and ambitious project to create a cross-reference catalogue, which, using the pectoral fins as a primary identifier, allows correlation with fluke photos. The idea being that the more unique features attached to a given whale, the better the chance of making a positive identification. Flukes, pectoral fins and dorsal fins can all be used with varying degrees of reliability so the more biometric points available, the better.

Jodi is a true citizen scientist, in that, while not professionally employed as a cetacean biologist, she has an enduring passion and curiosity about whales. In addition to her work on pectoral fins, Jodi has also been documenting in-water interactions with humpback whales, looking at the number and duration of interactions as well as repeat interactions with specific animals. One result of her efforts is a study co-authored by Ashley Heinze and Peter Stevick of the College of the Atlantic titled Extended and Repeated Human Encounters in a Humpback Breeding Ground, which Jodi presented in 2011 at the 19th Biennial Conference on the Biology of Marine Mammals in Tampa, Florida. In addition to these projects, Jodi speaks regularly to various clubs and organisations, sharing information about the whales and the Silver Bank, the findings of her work, and indirectly about the opportunity to experience the whales in the way she has with Conscious Breath Adventures. Ultimately, this is where the benefits to the whales are realised. When curious and passionate people like Jodi participate in citizen science, they not only contribute to a better understanding of the animals, but become advocates, ambassadors and even activists.

Andrew Stevenson, of Whales Bermuda, provides another example of this. A resident of Bermuda and guest of Conscious Breath Adventures, Andrew began in 2007 to document the humpback whales that visit those islands. Photographs he has taken of two whales together, in February 2012, off Bermuda, were matched to photographs of the same two whales taken off Newfoundland in August 1978, (34 years earlier)! It is widely accepted that mysticete (baleen) whales do not have the level of social complexity witnessed in odontocetes such as orcas and sperm whales, but while the photo could have been coincidental, it suggests humpbacks whales may have a level of social cohesion greater than we think. Andrew’s documentary film Where the Whales Sing also won awards and international acclaim at the 2010 Blue Ocean Film Festival, the Princeton Environmental Film Festival and others. He is a passionate voice for whales and his work in Bermuda continues to shed new light on the poorly understood, mid-ocean portions of the North Atlantic humpback whales’ annual migration. His rapidly growing Bermuda fluke ID catalogue of unique and repeated sightings offers a valuable checkpoint cross reference, helping connect the dots from north to south.

4. Supporting scientists
As noted, access to whales in a remote and relatively unstudied location is one of the unique things whale watching companies on the Silver Bank can offer. Therefore, hosting formal scientific researchers has been part of our annual operations for a number of years. An example of this, is a project led by Amy Kennedy of the National Marine Mammal Laboratory, which conducts research under the direction of the US National Marine Fisheries Service and the National Oceanic and Atmospheric Administration. Amy and her Dominican colleague, Oswaldo Vasquez, are studying the migrations of humpbacks between their summer and winter locales using satellite tagging. Combining this moderately invasive fieldwork (tags are attached below the dorsal fin, using dart-like projectiles) within an eco-tourism operation, presents challenges. However, we believe the work is important to understand the whale movements and will assist in developing better trans-national management. In the Dominican Republic, for example, findings from past satellite tagging efforts have led to an expansion of boundaries for the Sanctuary for Marine Mammals and current findings from the Dominican Republic and elsewhere, are being used to promote the creation of a proposed Pan-Caribbean whale sanctuary. In another piece of work, in early 2012, Amy and Oswaldo tagged a whale which was tracked for 56 days from the Silver Bank to its feeding grounds off Newfoundland - their longest unbroken track and the first continuous track from breeding to feeding ground.

To accommodate scientific staff without impacting the tourism experience, we host researchers in the very last weeks of the season, provide a dedicated tender and ensure scientists are able to travel a considerable distance from the epicentre of whale watching activities.
Conclusions, challenges and future directions

The insights offered by both citizens and scientists alike are fascinating and only add to the intrigue and compelling nature of our whale watching operations. As we learn more about the animals and the questions that remain to be answered, it is our goal to expand our scientific capabilities wherever possible. No one has yet witnessed humpback whales mating or giving birth on the Silver Bank. Were that to happen, with documentation, it would be a fascinating insight into the reproductive habits of the species. Additionally there is much still to be learned about the nature of humpback whale society – are whales observed on the Silver Bank related in any way? How much do groups from different North Atlantic feeding grounds interbreed? The more we find out, the more questions are raised.

Combining meaningful data collection within the constraints of operating a demanding 24-hour guest experience is perhaps the greatest challenge. For most business people it’s daunting to imagine having to take on even one more task in an already busy day. The examples presented above illustrate what has been possible for our company and we are committed to finding more ways to contribute in the future as we work together to enjoy and protect the world’s whales and dolphins and share them with the people who love them.

Sources:
1. www.openscientist.org
2. From the Po Ve Sham blog of Muki Haklay as reproduced at www.openscientist.org
3. www.flickr.com/photos/flukematcher/
**Introduction**

The type of boat drives the way whale watching is carried out more than one might believe. Its stability may influence the possible courses that can be taken according to the direction of the waves, which may not match the best course for approaching the animals in that particular situation. The position of any observer and his/her communication with the captain, are also crucial to guarantee a respectful approach. The height of exhaust pipes can be a problem for whales positioned downwind; unprotected propellers can harm them as well. The shape of the passenger deck can also drive the way boats are being positioned in relation to whales, by their captains - in order to assure a good sighting for everybody on board.

This case study, which is based on the four boats used by FIRMM since 1998 highlights how little the influence of boat type is considered. Even where regulations exist, the characteristics of a particular boat can obligate (or even seduce) captains to use a more disturbing approach. The key characteristics, detected after 10 years working on different boats, with different captains, will be listed and suggestions for possible improvement described.

**Hull shape**

The ship can be a mono-hull, a catamaran or a trimaran but stability will be better if the bridge is as low as possible and the passengers stay on a low main deck, rather than a higher one, a second floor, or a roof. A low passenger deck also allows for better observation of the animals when they approach voluntarily. The most stable hull shape is usually a flat one, which can also provide more speed if desired, due to its ability to plane on top of the water. The lighter the boat, the smaller the engine needed to plane. Though speeding can lead to the killing of surface dwelling animals like sunfish and turtles, (see protected propellers). Our second boat needed a lot of speed to navigate properly and with unprotected propellers it unfortunately killed a few sunfish. It was also sometimes too fast to detect diving cetaceans, which would emerge far away at the stern after we had sped over them.

**Exhaust pipe position**

Cetaceans have little, or no, sense of smell. Most smaller boats have their exhaust pipes positioned at water level, usually at the stern. This is not only bad for the whales, who can breathe in carbon-monoxide if positioned downwind of the stern, but also for passengers, especially during low speed navigation, when wind from behind can blow the exhaust fumes into the passenger deck. Increased susceptibility to seasickness may be the result. Rebuilding of the exhaust system to direct the gas to the roof should not be too big a task and is especially recommended for those boats with older engines, which can produce more black smoke. If rebuilding is not possible, trying to stay downwind of whales should be seriously considered.

**Glass bottoms**

Glass bottom boats are promoted as the ‘ultra’ experience by tour operators possessing these vessels and this is understandable where the trip is to view coral reefs for example. However if used for whale watching, the glass bottom may encourage captains to drive their boats over the animals. Thus their use for responsible whale watch operations is not recommended.

**Protected propellers**

These are designed to ensure objects or animals being hit will slide along the protecting structure. Some solutions however, possess a flat face pointed towards the sailing direction, which may actually cause more damage by stopping animals or objects. Protected propellers are known to cause vibrations. The water propelled against the protecting structure by the centrifugal forces generated by the rotating blades can often be the cause of this. However, these vibrations lead boat owners and shipyards to claim effective protection of propellers is an impossibility. Talking with an engineer of the shipyard that constructed the two boats we are currently using, we came to the conclusion that it is not necessary to surround the propeller. It would be sufficient to protect the volume in front of the propeller by a structure which allows objects and animals to glide around it and which leaves a gap to the rotating...

Position of captain and observer
The bridge should allow the captain to watch above the heads of passengers at the bow. On our third ship, the captain has free sight to the bow and the sides. The observer position on the roof allows for 360 degree sight. This is very important as it allows a view of the unprotected propellers (which the captain can’t see). The communication between captain and observer is direct, which we find is much better than any technical system. On boats where the captain doubles as an observer, he/she should have a fly bridge that provides a 360 degree visual, at least for the time spent beside whales.

This is not possible on our fourth boat, so the captain is dependent on the information received from the observer on the roof. Having had troubles with the communication system between the observer (me) and the captain this season, we have started to use hand held radios. If used occasionally these may be practical (for example to inform the captain that cetaceans have left the area near the propellers before engaging them again). But when used continuously, we find problems of interference, low battery power, or wind in the microphone arise.

Also, it seemed to have been the hobby of the competition this season to scan our channel in order to know what we were doing; something that might be desirable in certain circumstances but not helpful if you want your customers to have a peaceful experience with the whales. To address the communication issue we will be rebuilding the bridge of our fourth boat to copy the shape of the one on our third. The fourth boat is very stable however and possesses a magnificent open passenger deck. Both boats have a toilet and a closed area providing shelter, with large windows that can be opened. Unfortunately though, the propellers are unprotected and the exhaust pipes are at water level on both.

Conclusion
The ideal boat makes a big difference. It is safer for cetaceans, the work for the crew is easier, it gives a much better experience for passengers and can help an operator comply with voluntary and legal regulations. However...the perfect ship for whale watching has probably still to be built!
Introduction
It comes as no surprise that Iceland is considered one of the top whale watching destinations in Europe. The rich feeding grounds surrounding Iceland have attracted whales for centuries and whales attract observers. Thinking back in time, it makes perfect sense as to why foreign, and later Icelandic whalers sought the bounty from these waters. What does come as a surprise, is that in the 21st century, whaling still takes place here - in the same area that tens of thousands of tourists go whale watching.

In this case study we discuss the challenges whaling has caused for our operation, detail the ways we have tried working with and around the problem and also look at the political side of the matter. We will limit our coverage to minke whaling because of the relevance it has to our business and for the same reason, the focus will be on our main whale watching area, Faxaflói Bay.

Background information
Since 2000 we have run whale watching tours in the southern part of Faxaflói Bay. We began our operation in Sandgerði, moved to Hafnarfjörður a year later and to our current location in Reykjavík’s old harbour in 2002. The business has grown steadily and together with a few other operators we have managed to make whale watching the single most popular tourist activity in the Reykjavík area.¹

From the start, minke whales have been the bulk of our sightings. Other cetaceans such as humpback whales, white-beaked dolphins, harbour porpoises and a few other species are also sighted regularly, but not nearly as often as minke whales. Over the ten-year period 2002-2012 minke whales were seen on 86.57% of our successful whale watching tours.²

In 2003 a four-year scientific whaling scheme introduced by the Icelandic government took effect. Under this scheme 200 minke whales were hunted around Iceland, 51 of which were taken from the Faxaflói Bay area. Furthermore, in 2007 commercial hunting of minke whales began and since then, well over 300 minke whales have been hunted (mainly in Fáskrúðsfjörður), for commercial purposes.³

It is natural at this point to question what attracts these competing industries to the same area. The answer is basically convenience. It is close to the largest markets in Iceland’s capital and given the density of minke whales in the bay one can easily see why both parties find the area best suited for their operation.

What does it mean to offer whale watching in a whaling area?
Having to operate our whale watching trips in an area where whaling is carried was a huge concern and we worried about our customers encountering the sight of the brutal slaughter of whales. When we first heard of the government’s plans to resume whaling, we did everything in our power to revoke the decision. We tried hard to influence the government and the general public, but as we didn’t succeed we had to look at plan B and realising the severity of the situation we have emphasised damage control ever since. This doesn’t mean that we have lost sight of our main target to end whaling, but we have to try and work around it until we can stop it for good.

Avoid whaling boats
The first thing we decided was that it would be important to avoid whaling boats as we feared that seeing the whaling boats, or witnessing whaling taking place could have dramatic effects on our guests. Whalers realised that this would be in their own interest too. With two competing industries sharing this goal it came as no surprise that there has never been a direct conflict between whale watching and whaling boats in Faxaflói bay.

It is easy to criticise this decision, as direct confrontation could perhaps have caused a great stir in the international arena. We can’t deny that it seems the world has largely turned a blind eye towards Icelandic whaling and we ask ourselves whether we made the matter worse by avoiding the whaling boats. At the time it didn’t seem the right thing to do and we are still not certain that it would change a great deal. What we did do however, was to chase the minke whaling boats with a film crew for several days in order to present to the world the cruelty of the methods used.

Increased marketing
On that note and mindful of the negative image whaling has internationally, we worried it could severely impact on our operation. There weren’t any precedents but we had reason to fear serious decline
as studies had projected a potential loss of up to 91.4% for whale watching in Iceland.\(^6\)

Instead of sitting idly by, we increased our marketing and attended large numbers of travel fairs, workshops and other events aiming to mitigate possible negative impacts. We have also been fortunate enough to work with those NGOs that took the controversial decision to keep promoting Iceland as a whale watching destination, instead of promoting boycotts to the country. These included WDCS ‘Stop whaling’ and IFAW’s ‘Meet us don’t eat us’ campaigns.

### Decline in whale sightings

As much as we dislike stating this for obvious business reasons it is evident that the quality of whale sightings on our tours has declined. Comparing our average sighting success of 97.14% before the whaling began, to the current 92.14% the decline is evident.\(^2\)

Confirming our worries, aerial surveys have indicated an overall decline in the minke whale stocks on the Icelandic continental shelf since 2001\(^5\) and photo-identification on the whales in our area also suggest a low annual re-sighting rate.\(^6\)

Not only have the sightings gone down but experienced whale watching captains and guides have reported that there are fewer individuals spotted on each tour and whales seem more elusive than before.\(^7\) We have seen less and less ‘observers’, the curious minke whales that come and check out our boats. We fear that if these trends continue, it will bring an end to whale watching in its current form in Faxaflói Bay.

### Discussions

Getting back to the question we set out to answer, we understand why some individuals claim that whale watching and whaling can co-exist. Yes, whale watching is still run in Faxaflói Bay after a decade of whaling and at first glance the numbers indicate that whaling and at first glance the numbers indicate that whaling has not reduced tourist demand for whale watching in the area. On the other hand, statistics indicate declining sightings and poorer quality tours, which can have dramatic long-term effects on whale watching.

Our answer is therefore that, no, the two activities do not go together in the long run. It is our opinion that whaling is not only morally wrong and damaging to our operation but it is also messy, unsustainable and bad for the image of Iceland. We base this on figures indicating that less than 20% of whale meat is utilised, with hundreds of tonnes of offal dumped back into the ocean, right at our richest whale grounds.\(^8\)

We have never lost sight of our goal to eliminate whaling and continually try to reach out to our government in the hope that they will reconsider. We find it remarkable that at the same time the government and Marine Research Institute conclude that there is not enough research on the ecological impacts of whaling, they justify continual whaling on a stock that seems to be under stress.\(^9\)

From the start there has been little consideration by the Icelandic government on how the resumption of whaling might impact our operation. The first attempt to reconcile the anti-whaling camp came in 2009 when the Minister of Fisheries introduced a directive banning whaling in a 12 mile whale watching area.\(^10\)

In the run up to the directive we had high hopes for a real sanctuary in Faxaflói Bay, so found this gesture highly disappointing.

Over the last year our emphasis has been on getting governmental support for the whale sanctuary we had hoped for. Although this could imply that we have accepted defeat, this is far from the case. If minke whaling is prohibited in Faxaflói, its profitability (and therefore its viability) in Iceland is in doubt. Minke whaling spokesman, Gunnar Bergmann Jónsson, has repeatedly stated that their operation wouldn’t withstand a minke whaling ban in Faxaflói Bay.

### Conclusion

Looking back it is natural for us to question whether we could have done more, or whether we should have done things differently. It is of course impossible to say what could have been, but we feel that it is important to keep in mind how positive the political discourse on whaling has been in Icelandic society. The common denominator in all our actions has been to ensure our business can survive. Our attempts to put an end to whaling have been aimed at generating increased understanding and awareness of the economic importance of whale watching - without rocking the boat too much. We may have had to take a softly-softly approach, to fight whaling, but we still believe that in the long run we can succeed.

References

2. Elding Whale Watching. (2012)
5. Marine Research Institute (Iceland), (2011)
8. Ísland og Hvalir, (2012)
Many of the authors submitting case studies to this report run their own businesses, and some also captain their own boats. These are people with very little time to sit at a desk! Despite this, they have all expended an incredible amount of time and effort into their submissions and should be congratulated for this. Likewise, the similar levels of energy and enthusiasm they have put into implementing sustainability improvements in their businesses, clearly demonstrate the passion and commitment of these operators to lead positive change.

This is an honest report, not a piece of promotional literature and throughout it there is acknowledgment that all is not well in the whale and dolphin watching industry - together with the recognition that things can and must change. What is clear from the various case studies is that there are many ways in which whale and dolphin watching can be made more responsible and standards of sustainability improved. It is also clear that the industry possesses an enormous amount of talent, enthusiasm, great ideas, and of course, a passion for protecting whales and dolphins. In short, there is no reason why the problems faced by the industry cannot be solved by those people working within it.

This report is the start of something new and exciting - the opportunity for those working in the industry to share ideas and work together to improve the standards of their businesses and guarantee long term financial stability and sustainability. Crucially, it also illustrates that efforts to conduct responsible whale watching tours also benefit operators financially in a number of ways - meaning that there is no reason why these ideas, and many more that we hope to incorporate in the future, should not be taken up across the industry and across the world.

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This report was produced by the following 12 businesses as part of the 2012 Whale Watch Operators Partnership – an international coalition of whale and dolphin watch operators administered by Planet Whale. The partnership is committed to spreading awareness and encouraging the adoption of sustainable whale and dolphin watching practices worldwide.

“The summer [that I interned], my whole life changed. For the first time in my life, my eyes were opened to the growing issues from the impact of humans on nature. The words of the educator made me realise that I could make a difference, but the whales made me realise that I HAD to make a difference.” Cape Ann Whale Watch intern, Ildiko Polyak