The ecological discovery of humpback whale song combined with the popularity of photography lead to the modern conservation movement.

It is more than likely that sailors have long known that whales make strange musical noises. According to David Rothenberg in ‘Thousand Mile Song’, scholars once said that whale songs may have been the source of the myth of the ‘siren songs’ whereby mystical half-woman, half-birdlike creatures would sing to Odysseus as he lay down on the benches of his ship while drifting home. (Rothenberg. 2008, p.3) However, it was not until recording techniques were developed that anyone could listen to whale songs in their entirety. In the late 1950s, it was military science that first collected appropriate evidence. During the cold war, the US government conducted secret research into how sound travels underwater. The Americans were looking for ways to locate enemy submarines and to hide their own. They knew that sound travels five times faster underwater than it does through the air, but they also found that it travels at different speeds in different layers of the ocean, fastest of all at the bottom. Whilst listening to the ocean, the scientists heard low subsonic groaning noises that they gradually learned to identify as the music of the blue whale, whilst the rhythmic pulsating noises were those of fin whales. However, it was the melodic song of the humpback that caught the US Navy’s attention. The notes build up into phrases and the phrases into repeated themes. The song may last up to thirty minutes and are the most complex in the animal kingdom. (Chadwick. 1999, p111) In 1967, navy researcher Frank Watlington gave his humpback whale recordings to biologist and environmentalist Dr. Roger Payne (Rothenberg. 2008, p.17), who in 1971 alerted the public to the natural phenomena of humpback whale music through a journal article called ‘Songs of Humpback Whales’ in ‘Science’ magazine.

Roger Payne is an environmentalist and biologist who became inspired to change people’s perceptions of the world and show educate the importance of it. (Payne, 2005) He describes in his film ‘A life Among Whales’ that this bold idea emerged when he heard a report on the radio that a dolphin had drifted ashore. He went to observe it but by the time he got there, somebody had carved their initials into the side of the dolphin. Somebody else had stuck a cigar in its blowhole and finally hacked off its tale. (Payne, 2005) The cruelty of humankind overwhelmed Dr. Payne. He describes how as he stood on the beach looking at the dolphin the greatest feeling of emancipation came over him. He knew at that point that he was going to do something about the interactions between marine mammals and human beings. (Payne, 2005)

Payne was aspiring to become an environmentalist at a time when there were few environmental movements to join in the United States and at a time where the commercial whaling industry was at a peak. The popular image of whales was the one Melville had left us with: “portentous and mysterious monsters,” “undeliverable, nameless perils.” Every bit as ominous and unknowable as the ocean itself. Whales were menacing leviathans to be conquered and harvested, for food, oil and ambergris, an ingredient in perfume. (Standen, 2011)

At the time when Watlington handed over his whale song tapes, Payne did not have the time or inclination to study them in the depth he needed to and so he handed them over to Scott McVay, a friend who had worked on dolphin vocalisations. Payne had the idea of using a sonograph machine, which would print out the details of the sound in a form that could help make sense of its organisation. The device was originally invented during World War II as a possible aid to help the deaf learn to speak. This time, it would be used to accurately visualise complex sounds otherwise difficult for humans to describe. The results are printed in the form of a mathematical graph, measuring frequency against time. The graph showed regular patterns with form and shape creating intelligible structure. Roger Payne and McVay shared the credit of ‘Songs of Humpback Whales’, which was published in the January 1979 edition of National Geographic. The recording was so successful that National Geographic printed over ten million copies of the edition, which contained an article by Roger Payne along with photographs and their famous recordings. To this day, the January 1979 edition was the largest single print order in the history of the recording industry. It became one of the landmark events in changing the way humans perceive the animal world, capturing the minds and hearts of millions by introducing marine mammals into popular culture. By doing so, people soon started questioning the ethics of industrial whaling and the effect it was having on the whales.

Whaling began as far back as 6000BC. During the nineteenth century, modern whaling techniques emerged and the demand for whale oil exhausted many species of whales. The exploding harpoon was invented in 1844 by Albert Moore. This allowed whalers to capture rorqual whales, the largest group of baleen whales including the magnificent blue whale; the largest animal that has ever lived. In 1925, the first modern factory ships were used, which lead to a huge growth in the whaling industry as factory ships enabled whale products to be processed on board before they decayed rather than returning them to shore. Powerful radar-equipped boats benefitted the whaling industry by allowing them to operate in the stormy and inhospitable oceans, next to the Antarctic ice cap, creating ample opportunity. (Chapman, n.d. p.61) As a result, over forty thousand whales were being processed upon these floating factories per year and by 1930, 80% of whale species were on the edge of extinction. The last surviving wooden whaling ship of the USA named the Charles W. Morgan, made its last voyage in 1921. She was sailed for over two centuries by men who helped create the myths about whales, bringing back exaggerated tales from the sea. The man that led that last voyage, Captain Starbuck once said “I will have no man on my boat who does not fear a whale.” (JCrousteau,1968) In 1946, the International Whaling Commission (IWC) was set up by fifteen whaling nations to
manage whale stocks and by 1969, it was only Japan and the Soviet Union that were still whaling in the Antarctic. By 1982, the IWC issued a moratorium on commercial whaling to take effect from 1986. (HSI Online. December 2009).

During the 1970s, the emerging popularity of cetaceans and the development in technology meant that photographs of marine mammals started to grow. Jacques Cousteau’s pioneering underwater documentaries were shown on television from the mid. 1960s. They adopted storylines, which would allow the viewer to relate to these new and fascinating creatures, stripping Melville’s complex metaphors, which previously intimidated people’s perceptions. Cousteau describes in his popular documentary how at first, the whales size and power frighten them. “Suddenly underwater, our fear changes to awe. Never have we seen something of such enormity, move with such grace.” (Cousteau, 1968) Jacques Cousteau was and still remains a highly respected figure of the underwater world. He developed and engineered the ‘self-contained underwater breathing apparatus’, or ‘scuba’ opening up the underwater world to humans with a system still used to this day. Through more than one hundred television films and fifty publications, Captain Cousteau opened up the oceans to millions of households, showing his discoveries, experiments but also displaying the human effects of the sea, such a pollution and whaling. Cousteau peeled back the layers of the ocean in a fashion few people thought possible.

Although Cousteau’s television series excited many and encouraged people towards the idea of environmentalism and conservation, it was still clear that encounters with marine mammals and such experiences in the underwater world, were the prerogative of a highly specialised breed of underwater adventurer. Cousteau would emphasise the dramatic nature of exploration beneath the surface of the ocean. Using scuba and sophisticated oceanographic equipment often invented and engineered by ‘the team’,

In May 1977, James Hudnall wrote an article for Audubon magazine about his experiences diving off a small inflatable boat, often alone, with no more equipment than a mask, snorkel, fins and camera. In the same article, Hudnall went on to describe the first protracted look at living whales. He explained how the creatures are “gentle, clever, passive and rational beings.” (Hudnall,1977, P56-101) Alongside his descriptions, he provided detailed black and white photographs of whales, in a way never seen before.

The photograph shows the whale surfacing, reminding us that we are both mammals. Much of our physiology works in the same way. (Cousteau, 1968) The halo of light shining over the whale emphasises our previous misconceptions of these creatures being found only in the deepest, darkest depths and acts as a metaphor for discovery.

The photograph would have originally been exhibited alongside Hudnall’s journal in the Audubon nature magazine where he wrote of his experiences as well as descriptions of the animals, which would have helped illustrate the significance to the viewer, giving more meaning to the image than if it were solely exhibited.

It is important to remember the limitations of technology at the time this photograph was taken. The work of James Hudnall and Jacques Cousteau may seem dated and lack quality, but it were they, along with scientists like Dr. Roger Payne who enlightened and inspired millions. They used photography and video making to teach a language nobody knew or cared to otherwise understand.

By the end of the 1970s the public was sensitized to a perception of marine mammals, particularly the great whales, as objects of wonder and mystery, to admire rather than fear and to be protect rather than hunt. In 1978, documentary filmmaker Nicholas Noxon wrote and produced the Emmy Award winning documentary “The Great Whales”, which described the change in public perception. Included in the video was footage of modern whaling operations and it was...
poignantly contrasted with footage of humpback, blue, killer and gray whales that mirrored the message in Hudnall's article for Audubon magazine.

Before long, the words ‘Save The Whales' became iconic. The simple title appeared on car stickers, fliers, petitions and t-shirts. Conservation groups dedicated to this purpose formed including both average citizens and social radicals whose ideas on how to respond varied widely. The first was the American Cetacean Society (ACS), which was formed in 1971. Quick to follow was the Whale Center and Connecticut Cetacean Society (CCS). Well-established environmental organizations like World Wildlife Fund (WWF), National Wildlife Federation (NWF), Humane Society of the United States (HSUS), Sierra Club and National Audubon Society also joined the movement. The environmental organization Greenpeace formed in the early 1970s as an offshoot of the Sierra Club. In 1975 Greenpeace launched its first anti-whaling campaign by actively confronting Soviet whaling fleets in the North Pacific. (Greenpeace Online, 2009). This was the first direct action we had seen for the benefits of the environment in Great Britain.

In the January 1979 issue of National Geographic, Dr. Payne said, “Pollution has replaced the harpoon as a mortal threat to whales, and in its way can be far more deadly.” (Payne, R. 1979. P.25) Now that Payne had captured the imaginations and emotions of the public with his scientific discoveries and conservational pleas, he wanted people to expand their thinking into long term, global environmentalism and thus further conservation. The whale became a supreme symbol in a new campaign to preserve nature. The oceans cover 70% of the planet. If it is being heavily polluted, so are the whales, and so are we. ‘Save the Whales' campaign developed into ‘Save the Earth’ (Payne, 2005) and before long, the modern conservation movement had fully flourished.

Even today, studies of the humpbacks continue as collaborations between photographers and scientists strive for results. Since 1979, National Geographic photographer Flip Nicklin has worked with lead researcher and ecologist Jim Darling in a study of humpback whales off the coast of Maui, Hawaii; the famous gathering place for whales to sing, breed and give birth during the winter months. Alongside earlier protagonists such as Hudnall and Cousteau, Flip Nicklin carries us into the world of modern photographic technology whilst continuing to develop modern conservationism. Executive Director of The Whale Trust - Meagan Jones said in an interview with Photo Media that his work is a combination of art and science. He brings people together with whales and the ocean in a way that's accessible, scientific and inspirational. (Jones, 2011)

\[Figure 2,\]
\[© Flip Nicklin, 1999\]

This portrait by Nicklin of a humpback whale shows the advancement in photographic technology. Nicklin grew up shooting 80 ISO, and now is able to shoot 3000 ISO whilst maintaining optimum quality. He uses a Nikon D3 in a ‘Sea & Sea' housing. According to Nicklin, the increase in ISO capability for digital cameras was much needed, particularly when it comes to photographing whales. As a result of their size and the distances you have to be from them to photograph the entire whale, he has had to depend on natural lighting when working underwater.

In Figure 2, you can see how natural light has been used to illuminate the subject, with a composition that makes good use of diagonals, to fashion an abstract portrait picture. Portraits are taken to give us an emotional insight into a particular person or animal, which is why eye contact is of ultimate importance. Douglas Chadwick from National Geographic Magazine told of how a humpback gently carried Nicklin towards its eye with its fin. Nicklin has recreated his experience in Figure 2 by framing the image closely around the eye. The frame emphasizes the whales’ disproportioned eyes and reminds us of its unique communication abilities. The lines on its face is symbolic of its wisdom and the surface reflection prompts our knowledge that like us, this is in fact a mammal.

Unlike Hudnall's 1976 photograph, Nicklin's image has the power to stand on its own. The clear waters, advancement of technology and Nicklin's exceptional experience, make it possible to produce images of immense quality, suitable for large scale exhibits or for publication such as Nicklin's 'Among Giants', published in 2011.
Researchers James Darling and Lea Gerber shoot biopsy darts at a humpback whale. At first glance, the photograph shows two men pointing a gun at a surfacing humpback. Flip Nicklin has purposefully misrepresented the photograph, to capture curious eyes through impacting shock.

Biopsy darts are used as a common technique for collecting tissue specimens from cetaceans at sea. Crossbows or guns like these are used to fire purpose made darts into the side or back of the animal. They are designed so that on impact, they penetrate through about an inch of skin and blubber before falling out. The dart is attached to a float, making it easy to retrieve from the sea. These samples give great insight into genetic, toxicological and the feeding ecology of cetaceans. Information like this is key to their survival. (Marsili, 2000, p.523-526)

As a result of the humpback whales history, it is easy to assume for a member of the average public that this is an aggressive photograph, when in fact it is the opposite. Therefore, this photograph certainly needs writing alongside to communicate its purpose fully. When analysing the photograph on its own, it is suggested that these men are westerners by the appearance of the men and the boat, so by shooting at a whale they are thus committing a criminal offence. It is possible that their true motives are able to reveal themselves, however Nicklin has not made it easy.

The angle at which the photograph has been taken, suggests he too is a part of the aggression, making a more intimidating scene than if he were an observer from another boat. As we cannot see the men’s faces, we create a face for them, which in a photograph without clear motivation, can be anything the imagination allows. This photograph was in fact published in the July 1999 Issue of National Geographic alongside writing explaining that Darling is in fact ‘hunting for knowledge’. (Chadwick, 1999)

Nicklin displays huge diversity in his photographs. Unlike Figure 2, which shows how nature photography can be wholly artistic, Figure 3 is taken from an editorial approach. It could comfortably partner an article in a newspaper or in this case a magazine, which educates people about the uses and benefits of tissue biopsy. This, of course is part of Flip Nicklin’s role for National Geographic as well as holding personal and active interest into the research of whales from both a scientific and conservationist perspective.
Surface displays such as this is one of the reasons humpbacks are favoured amongst whale watchers around the world. (Whale Trust Online. (2007 - 2010) Figure 4 is a perfect example. Tourist boats use sonar as a tracking device to seek out the humpbacks and once they reach within close enough range, the engines turn off and they wait for the spectacle. It is a rare and clearly wonderful experience. However, it is argued that tourism contributes to pollution in the seas and distress to the animals.

Every boat will create litter and sewage, which should be appropriately dealt with but ultimately there will be occasions when rules are disobeyed or it is impossible to avoid. Environmental damage can be caused by oil or fuel leaks and the release of heavy metals from paints and untreated bilge residues can also cause potential damage. The use of anchors for mooring can cause extensive damage to near-shore marine ecosystems, including coral reefs and seabottom habitats, such as sandy, gravel bottoms and rocky reefs.

We now know that whales communicate using sound over vast distances. It is suspected that they are also affected by noise pollution. Whales communicate at frequencies below 1000 Hertz. This is the same frequency that resonates from many of the activities contributed by humans. Manmade sounds could be drowning out the calls of mates, calves and other pods that marine mammals depend on.

This is a problem amongst both commercial and recreational boating. However, it seems hypocritical to be teaching a population about the ecosystem through tourism whilst potentially damaging the ecosystem by which you are teaching.

The image shows excellent use of thirds and perspective and the whale is captured in the perfect moment of its breach. Nicklin has frozen the movement to emphasise the drama of the spectacle, which contrasts well with the looming fog. He has used a larger aperture to drop the boat out of focus just enough that it is not a distraction but an addition to the composition and a key element of the picture’s perspective.

When thinking about how this image can be used, there are opposing possibilities, neither of which are the true case. I would use this photograph to raise environmental concern over tourism. Equally, this photograph would be an excellent choice when promoting whale-watching tourism. It tells a clear story of ‘what you will see when you go on this tour.’ It promotes beauty and heritage in a seemingly fragile, natural world. However, it was published in the July 1999 Issue of National Geographic ‘Listening to Humpbacks’ with words attached: “Whale-watchers flock to such spectacles during the spring-to-fall feeding season off Alaska, while scientists debate whether groups of whales hunt cooperatively.” appearing on this occasion, to have no such opinion on the effects of tourism.
A branch leading off from tourism is the idea of ‘ecotourism’. By definition ecotourism is: tourism directed towards exotic natural environments, intended to support conservation efforts and observe wildlife. (Fennell, 2009, p.372-376) Ideally, ecotourism is environmentally and socially sustainable, meaning that it respects both the integrity of ecosystems and that of local businesses. (Peterson Del Mar 2006 p.177)

Humpback whale individuals can be sufficiently identified by the patterns of their tail flukes. Over the years, catalogues have been created, containing photographs of humpback tail flukes by researchers and tourists alike, to help piece together information on migration, breeding, growth and ultimately help predict population growth and distribution.

Photo-identification studies of cetaceans began in the 1960s – 1970s using 35mm slide film or high-resolution black and white film. Figure 5 shows a photograph taken by Jim Darling in 1979. He uses the same photograph today to recognise a particular male humpback. (Chadwick, 1999, page 115) Quality is important as the negatives are looked at using enlargers and magnifiers. Today in the digital world, we use RAW format image files for photo-identification purposes. These are the digital equivalent of film negatives and are sometimes referred to as ‘digital negatives’. They contain untouched pixel information direct from the camera’s sensor. Formats such as JPEG and TIFF image files are compressed versions, containing much less information and are therefore unsuitable for photo-identification objectives. The advancement of technology and drop in retail prices mean that photography has become much more accessible. Cameras are now a part of people’s everyday lives, whether it be a camera phone, compact camera or DSLR camera.

Since the 1970s, ecotourism has won the hearts of many westerners. They are able to travel to exotic places, consume nature and feel they have achieved having done so. In its pure form, the goals of ecotourism have proved difficult to meet in practice. For example, travelling to exotic, usually remote locations often requires a great deal of energy and creates a significant amount of waste, as discussed in Figure 4. However, by making use of the resources that we already have by involving tourists, at no extra cost or effort, to use their cameras and help researchers identify, track and potentially save the cetaceans they are admiring, there are certainly encouraging outcomes under the complex label of ecotourism.

Dedicated wildlife photographer Scott Portelli, has spent the last ten years collecting photographs of humpback whale flukes throughout Oceania as well as researching humpbacks and donating footage to scientists and government bodies. (Portelli, 2007-2013)

These photographs have clearly not been captured for photographic aestheticism. They have been taken purposefully as a research source for humpback identification. When composing these specific photographs, it is clearly important to include the tail fluke, but as we can observe from Figures 5 – 7, the overall organisation of the picture: composition, shape, colour and perspective is not important. For example, in Figure 5 the tip of the humpback’s tail has been cut out of the frame making for bad composition as well as being underexposed. In Figure 6 the humpback’s fin or possibly another whale has been captured inside the frame and the image is flat and out of focus. Although in Figure 7 the subject is well composed, the shot is not straight. It seems difficult in the frame of mind of a working photographer to accept these unmissable faults, but it is important to remember that for the purpose of ecological and biological investigations, it is about quantity as opposed to quality.

Figures 6 - 8: © Scott Portelli, 2007-2013
To change the world’s perception of an animal so unknown to us was a remarkable achievement. The myths and tales that evolved and dominated people’s beliefs throughout generations were those of fear and threat.

When Roger Payne published ‘Songs of Humpback Whales’, the world listened. Never since has there been a larger single print order in the history of the recording industry and it was National Geographic who seized the opportunity. By collaborating sound with words and photography, National Geographic captured the attention of tens of millions. However, without that collaboration, the whale would not have excelled to become the principle symbol of the new campaign to preserve nature.

With the help of advancements in technology, such as the ability to televise moving images as well as publications and media taking interest in research developments of a photographic and scientific nature, the world has been able to push aside previous misconceptions about the mysterious cetaceans and discover the truth about whales in a way that was previously impossible. Cousteau’s documentary films were revolutionary, capturing the imaginations of millions. Whilst Hudnall allowed people to feel closer to the animals by describing his experiences as being primitive, often alone, with only limited resources.

Without these key cultural changes, the ‘Save The Whales’ campaign would not have gained its popularity and media coverage and as a result, ‘Save The Earth’ campaign may never have existed. The IWCs decision to issue a moratorium on commercial whaling would never have taken place without direct action campaigners from the US and Europe and therefore commercial whaling would still be legally taking place across the world.

Photography has seen a development not only in technology but in what it is we photograph. Flip Nicklin’s catalogue of works show huge diversity in how we can communicate with an audience. Photographs that are particularly effective are those that compel the viewer to learn. Figure 3 for example encourages you to read, or even just consider what it is the photograph is portraying, as the instinctive reaction upon first glance, is unthinkable.

Ecotourism has allowed for average citizens to now have the opportunity to help in research methods. Being able to contribute to photo-identification catalogues is a huge benefit for marine researchers and is enjoyed by tourists that want to be involved. Photographers like Portelli have thrived in these contributions. Whilst developing his ten year project portfolio, he has also provided identifications for research, public and government use.

There are always questions to be asked. The 1986 moratorium made a huge impact but Japan, Norway and Iceland still continue to whale. Members of the IWC can continue to whale if they lodge an official objection to the moratorium or if it is for scientific purposes. Despite widespread criticism amongst conservationists, Japan, Norway and Iceland continue to use these as loopholes for commercial whaling. According to Roger Payne, numbers in whale populations are once again declining rapidly. (Payne, 2011)

With every positive comes a negative. Even the concept of ecotourism has its obvious floors. What we do know is that by combining the powers of photography and science, we can change the way the world thinks, which as the past has proven, can help ‘Save The Earth’.
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Text


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Figures

Figure 1
Figures 2 – 4  

Figure 5  

Figures 6 – 8  