

# TurtleTown News

An IFAW Publication

www.ifaw.org

September 2008

## Developing town kills turtles

Uncontrolled development along the TurtleTown coast is killing the region's nesting population of sea turtles, says TurtleTown University marine biologist, Dr Mark Powell.



■ An endangered turtle swimming off the TurtleTown coast

"The number of turtle nests in our area has dropped from 1,000, to just 200 in just two years," says Dr Powell. "This is caused largely by the bright lights from the new buildings along the coast. The lights make the turtles disorientated when they come ashore to try to lay their eggs, so they go back to sea again or don't build adequate nests to protect the eggs."

He says that there have also been cases of workers and machinery from the new

development straying into the nesting areas and accidentally destroying nests.

"Although the turtles are on the endangered list and protected by international law very little is being done by the government to stop illegal beach development and protect the turtles nesting area," says Dr Powell.

TurtleTown Mayor, Robyn Clark, refutes Dr Powell's claims. "The turtles are one of the reasons tourists come here and we need more hotels to accommodate



■ Plastic waste on TurtleTown beach

these visitors. It's not in our interest to hurt the turtles. The hotels also mean more jobs for our local people. The environmentalists and animal welfarists should not forget this," she said.

### Plastic waste also kills

But, Dr Powell also says that turtles are not just threatened by the development of the area alone. Around 30 dead turtles have washed ashore in the last three months. Post-mortems on the animals conducted at TurtleTown University have identified the plastic bags from the local supermarket found in their stomachs as the cause of death.

"Jellyfish is a main source of turtle food; they mistake the plastic bags for jellyfish when they see them floating in the water and eat them," explains Dr Powell. "It is imperative that local people take responsibility for protecting these wonderful creatures and take care when disposing of their rubbish."

**A public meeting will be held at the Town Hall on 25 October 2008 to discuss the turtle and TurtleTown development issue.**

# Beneath the Waves

Protecting Marine Wildlife



Supported by:  
**Leonardo DiCaprio**  
Actor and Environmentalist

Information and  
Classroom Activities



# Introduction

Welcome to *Beneath the Waves – Protecting Marine Life* an action-packed information and education activity booklet specifically designed for IFAW's Animal Action Week.

This year, the week's focus is upon the world's oceans; the pack explores the threats that marine animals face and what we as humans can do to protect them.

The educational activities are recommended for a range of subjects including Science, Maths, Geography, English and Drama curricula for young people in secondary education aged 10 and above.

Further educational activities can be found on the Animal Action Week website at [www.ifaw.org](http://www.ifaw.org)

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Oceans have been around for about 4 billion years. Half of the water in the oceans was already inside earth when it was formed around 4.5 billion years ago as a fiery burning planet. As it cooled, steam was released causing the longest rainstorm ever, which lasted for thousands of years. About 50% of the earth's water came from thousands of comets made of rock and ice crashing into the earth's surface in its earliest years.

Some 250 million years ago, when earth had a single landmass, there was just one ocean, which we call *Panthalassa*. When the land split so did the oceans, although they are still connected. Three quarters of the earth is covered in water, which is why it is known as the Blue Planet.

**A recent scientific study has concluded that more than 40% of the world's oceans are heavily impacted by human activities.**

Over many years oceans continually change as a result of mostly natural forces, such as shifting continents and volcanic eruption. The Red Sea was created when Africa split from Arabia 50 million years ago – it is still getting wider by 2 cms (0.78 inches) every year.

Scientists believe that in about 10 million years a vast area of East Africa will have become flooded to form a new sea.

The Mediterranean dried up 6 million years ago when the narrow Straits of Gibraltar closed because of Spain and Africa's land masses

coming together. It simply evaporated. At some time in the future this is expected to happen again.

The oceans are the driving life force of our planet, indeed without water no living thing can survive. Currents are vital to transport heat, food and oxygen around the globe. The great Ocean Conveyor is the largest and most crucial system of ocean currents and takes about a thousand years to go round the world. When this current failed 250 million years ago more than 90% of life was wiped out in the greatest mass extinction ever.

In the Pacific, currents create a temporary change in climate known as El Nino. This happens every few years causing torrential rain in South America and, on the other side of the world, terrible droughts in Australia and Indonesia. These effects have been felt in Africa too.

Our oceans are home to an incredible collection of plants and animals.

The animals range from microscopic plankton to the world's largest creature – the blue whale. There are nearly as many different species of fish in the seas as there are land animals and birds combined – about 14,000.

But the smallest creatures can be the most important. Phyto-plankton are no more than the size of a pinhead, but in their billions, as a byproduct of photosynthesis, they provide half the oxygen in the world and life on earth depends on it.

Marine animals are split into three groups – drifters (*zooplankton*), bottom dwellers (*benthos*) and free swimmers (*nekton*). Drifters include such animals as jellyfish, while lobsters and starfish are among the bottom dwellers. The free swimmers group includes animals ranging from eels and other fish to whales and dolphins.

All these animals are now at risk. The sad reality is that although oceans have existed for billions of years it is as we enter the 21st century that they face their greatest threats, including pollution, hunting, over-fishing and global warming. People are responsible for every one.

The oceans and the vast array of marine wildlife they contain need protecting more than ever.



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# The Living Oceans

Scientists generally agree that life evolved in the oceans from primitive cells created more than a billion years ago.

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## Teachers' Notes

The film *Beneath the Waves* and accompanying student quiz *What's your score?* on page 10 explore the impact that humans can have on the creatures that live in the world's oceans and how this impact ultimately affects us all.

The information in this booklet also gives useful background to the film and educational activities on pages 10-16 – including the quiz. The information can be used for advance discussion with the students. It may be useful to write some points on the board before they see the film and start *What's your score?* The answers to the quiz appear upside down and at the bottom of the page.

## About IFAW

IFAW is an international campaigning organization founded in Canada more than 35 years ago. Its mission is to improve the welfare of wild and domestic animals by reducing their commercial exploitation, protecting wildlife habitats and assisting animals in distress. Recognizing that the fates of people and animals are inextricably linked, IFAW seeks to promote animal welfare and conservation policies that advance the well being of both animals and people. It has bases in 16 countries and 2 million supporters world wide.

In the next twelve months, whalers intend to kill more than 2,000 whales for commercial purposes.

Japan uses scientific whaling as a way of getting around the 1986 ban on commercial whaling. However, little information of any value has come from these controversial activities despite the deaths of more than 15,000 whales in the last quarter century. Whale meat is sold as an exotic food in Japanese restaurants.

In the next twelve months, the whalers intend to kill more than 2,000 whales for commercial purposes. Such whaling is the easiest threat to resolve. All it would take is for Norway and Japan to decide to stop killing whales for products that are not really needed.

Pollution is a serious threat. This can be pollution from debris in the ocean such as plastic or chemicals. More recently, the

serious risk of noise pollution has been identified as an important issue.

Whales and dolphins also become entangled in fishing gear all over the world. For some endangered species such as the Northern right whale, we know that the survival of this small population is threatened by entanglement in lobster pot lines and other fishing gear.

### DNA Detectives

IFAW has funded DNA analyses of whale meat on sale in Japan and South Korea for more than ten years. Just as the police analyse samples taken from crime scenes in order to identify criminals, the DNA in small samples of whale meat can give us a lot of information.

The IFAW-funded science showed that there were species of whale on sale in the market place that Japan was not officially hunting. One example was Western Pacific gray whale

meat. This population has been reduced to only 120 animals and is threatened with extinction, so the killing of even one of these whales may prevent their survival.

As well as identifying the different species, or even local populations of the whales, it is possible to estimate the number killed. DNA evidence from research work in South Korea suggested that up to 200 whales were killed each year and, in January 2008, this was confirmed by a police raid which uncovered 50 tonnes (49.2 tons) of illegal whale meat in two warehouses in Ulsan, South Korea.

Using these DNA analyses, we have been able to show that the killing of the more abundant species, such as minke whales, provides a cover for the sale of meat from protected species. This is yet another argument for ending whaling and one which carries weight within Japan as well as elsewhere.

### Whale Watching

Whales are worth much more alive than dead. Whale watching has grown into a massive international tourism industry worth hundreds of millions of pounds each year.



©IFAW/Stewart Cook

## Humpback Whales

Humpback whales are the latest target in Japan's scientific whaling most of which is conducted in the remote waters of the Southern ocean which surround Antarctica. In 1994, the Southern ocean was declared a sanctuary for whales by the International Whaling Commission. Twenty-three nations voted in favour of this decision and only

Japan voted against it. Japan intended to kill 50 humpback whales in the most recent whaling season of 2007/8. In the face of strong opposition from around the world, Japan has agreed to postpone this hunt for the time being. Nevertheless, around a thousand minke and fin whales will be killed.

## High and Dry! Beach Rescues

One of the strangest animal phenomena is the mass stranding of marine mammals, when large numbers come ashore and beach together. Mass strandings happen for a variety of reasons, some of which are: complex underwater topography, social bonds, underwater noise and extreme tides. Sometimes we simply don't know why they occur.

Cape Cod in the USA, southern Australia and along the shores of New Zealand are the greatest hot spots where this occurs.

IFAW's Cape Cod Stranding Network (CCSN) responds to an average of 226 strandings every year, including up to 11 mass strandings. In recent years, 15 species of whales and five species of seals have stranded there.

CCSN has found that the best way to rescue mass stranded marine mammals is to prevent the stranding from happening in the first place. When the team discovers a group of whales or dolphins swimming dangerously close to shore, they take to the water in small boats. They place special acoustic devices called 'pingers' in the water which produce harmless, but annoying, high frequency noises that drive the animals away from shore and back to sea.

CCSN's rescue work is part of a three-part mission that also involves research and public education - with each aspect focusing on the conservation of marine mammals and their habitats.



©IFAW/Barry Donahue

# Ocean Giants Under Fire

Whales face more threats today than at any time in history.

Scientific research is critical in order to resolve these threats but the research that is needed comes from the study of live animals rather than by killing them.

# Biggest

## Marine Mammal Hunt in the World

©IFAW/Stewart Cook



Hundreds of thousands of seals are hunted each year. Hunting takes place in countries around the world, including Canada, Russia, Greenland, Norway and Namibia.

**T**he largest of these hunts takes place in Canada where more than a million harp seals were killed in just the three years leading up to 2006. Scientists warn that the number of seals being killed in Canada cannot be sustained by the population, which is in decline. There is a high risk that the seal population will be depleted by up to 70% over the next 15 years.

The seals are either beaten to death with clubs called hakapiks or shot. Up to half of those that are shot in water are never recovered. The Canadian government reports that 98% of the money made from sealing is from the fur of seal pups aged between two weeks and three months. These fur pelts are made into non-essential luxury items such as fur coats and other garments.

In the past, seals have been blamed for the collapse of fish stocks, but now it is accepted that over-fishing and failures in fisheries management were the problem.

Canada's commercial hunt has been widely condemned internationally and even the majority of Canadians are opposed to it. Many governments around the world are now acting to implement bans on the importation of seal products. They say they do not want to be involved in an inherently cruel, unsustainable, wasteful and unethical hunt.

### Russia Seal Hunt Survey

Over the past decade surveys of seals carried out by scientists in the White Sea in Russia show the number of seal pups has dropped to a critical level. In 2005 it was 110,000, just a third of what it had been four years earlier. As a result of IFAW's work the seal quota for killing seals was reduced by 30% for 2008.

Russia's Minister of Natural Resources this year requested the government to bring a full stop to Russia's hunt for newborn whitecoat harp seals of less than three weeks old. This first step in halting Russia's harp seal hunt was applauded by IFAW.

### Global Warming Threat

Scientists warn there are serious risks to the oceans and marine wildlife posed by global warming. The impact on marine mammals such as seals and polar bears and their habitats is already starting to be seen.

For example, in addition to hunting, harp seals are also threatened by global warming destroying the icy habitat they need to survive.

The ice is essential for harp seals giving birth and nursing their pups. Without these ice nurseries the pups cannot survive. If mothers are forced to give birth in water the pups die. If they do find ice, but it is melting and breaking up, the pups may be unable to get enough of their mother's milk and still die.



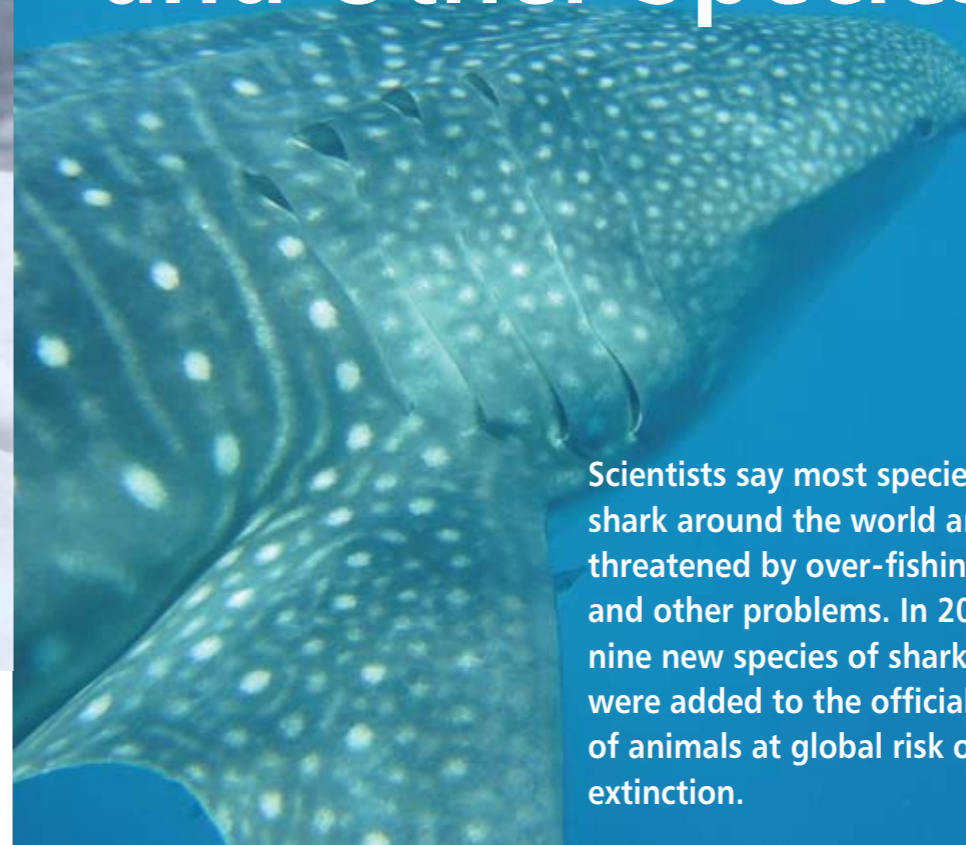
In ten of the 12 years up to 2007 there were poorer than average ice conditions and seal pups died in huge numbers as a result. In 2002 it is believed that three quarters of the seal pups died due to this in the Gulf of St Lawrence in Canada. In 2007, Canadian government scientists estimated that nearly 100% of seal pups in the southern Gulf of St. Lawrence perished due to lack of ice before the hunt even began.

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# Sharks

## and Other Species



Scientists say most species of shark around the world are threatened by over-fishing and other problems. In 2008 nine new species of sharks were added to the official list of animals at global risk of extinction.

### Sharks Under Threat

More than 100 million sharks are killed each year, many of them just for their fins to make the highly priced shark's fin soup. Even the blue shark, which is the most common and heavily fished species, has declined by more than half in the North Atlantic.

### Whale Sharks

Sharks range in size from the 15 cms (6 inches) cigar shark, to the huge whale shark. The whale shark is the largest fish in the world and can grow up to 15 metres (50 feet) in length. It eats plankton and is found in waters along the equator. Whale sharks can migrate huge distances, sometimes traveling from the breeding grounds in the Indian Ocean, into the Atlantic and then across to the Caribbean.

One of the areas where the whale shark is most under threat from being harpooned by fishermen is off the coasts of Gujarat, India. Its meat is often exported to south east Asian countries.

Because whale sharks are not able to reproduce until they are about 30 years old, there is a serious risk to their population as they are often killed before having the chance to produce a new generation of whale shark offspring.

Thanks to a recent campaign whale sharks are a protected species in India, the first fish ever to have been given that status in the country.

Six towns in the key coastal fishing areas in India have also adopted whale sharks as their mascot.

A sign of the success of the campaign has been the rescue and release by fishermen of more than two dozen whale sharks off the west coast of India that had been entangled in fishing nets in a span of just one year.

### Basking Sharks

Another gentle giant that is under attack is the basking shark. Although they can be as long as a bus and weigh as much as an elephant they are harmless to humans. They have enormous mouths, but only feed on tiny plankton.

They are protected in the waters of some countries such as Britain and the US, but are killed by others, including Norway and China. They are hunted mainly for their huge 2 metre (6.6 foot) fins for shark fin soup and the oil



©IFAW/Kara Bryson

### Porpoises

The harbour porpoise is one of the smallest members of the whale family, measuring about 1.55 metres (5.1 ft) in length. They are at risk from being caught as unintentional bycatch in fishing nets.

The Vaquita is the smallest porpoise in the world and one of the top five most endangered cetacean in the world with only about 500 surviving. It is only found in the upper Gulf of California, Mexico. IFAW together with the US Marine Mammal Commission, helped provide a research vessel to study the Vaquita and develop conservation strategies with a scientific base.



©Ari Friedlaender

### Turtles

Hawksbill sea turtles live in the waters of the Atlantic, Pacific and Indian Oceans. They are now officially critically endangered because of the activities of humans. They are often killed because of the value of their shells for tourist trinkets. The eggs are also poached from the nests on the beach. IFAW is working with local NGOs and coastal communities to promote marine turtle conservation efforts and improve people's livelihoods through economic alternatives in Latin America, Africa, India and the Caribbean.



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### Polar Bears

Polar bears are still hunted in Canada, which attracts trophy hunters from other countries, particularly the United States. Many people regard hunting animals as cruel, unethical and unsustainable.

Scientists believe that climate change caused by global warming is likely to reduce the polar bear population by about 30% in the next 50 years. This warming causes the vital pack ice, which polar bears need to hunt, simply to melt away.

from their enormous livers, which can be one third of their body weight.

Thankfully a campaign resulted in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) listing them as endangered so future trade and fishing would be better controlled.

# Polluting the Oceans

Pollution of the oceans is one of the main threats facing the planet's environment and the animals living in the seas.



**M**ost marine debris comes from waste that people have dumped on land. It may be blown by the wind or washed off in the rain, then carried in rivers, drains and sewers down to the sea. Of course a great deal of debris, about a fifth, is dumped by people from boats at sea, including old fishing nets.

Scientists believe that each year hundreds of thousands of seabirds and tens of thousands of marine mammals die after swallowing or being entangled in marine debris.

## Plastic Plague

About 100 million tonnes (98.4 tons) of plastic is in the oceans, which is nearly 90% of all marine debris. UN experts estimate that in just one square mile of ocean there are around 46,000 pieces of plastic rubbish.

One cause of this waste is plastic bags. Each year the world uses about 1.2 trillion plastic bags or on average 300 bags for every person in the world.

One whale that died in Cairns, Australia, was found to have 6 metres (19.7 feet) of plastic inside its stomach. More than 260 marine animals suffer from swallowing plastic including



loggerhead turtles and albatrosses that mistake plastic bags for the food they normally eat.

One of the worst problems about plastic is that it could last for around 400 years in the seas and some scientists say it may possibly hang around for up to 1,000 years. Over time, plastic rubbish breaks down into tiny particles floating in the water that all creatures in the sea can swallow – from the tiniest organisms such as krill to the largest marine mammal, the blue whale. The worst polluted areas of the oceans are described as 'plastic soup' by scientists.

In any sea in the world you will find tiny plastic pellets. These pellets are used by industry to be melted into the plastic objects we use. Because they are so small many sea animals mistakenly eat them. Due to the harm these can do to animals they are sometimes called 'mermaid's tears'. These pellets make up about 10% of all the plastic found in the oceans.

One more problem with plastic in the oceans is that it works much like a sponge and soaks up some poisonous chemicals that have been dumped into the seas.

This threat to marine wildlife is a relatively new one, plastic only became a household product about 50 years ago. However studies show the damage to animals is getting worse every year and the amount of plastic in the oceans is increasing rapidly.

## Oiled Wildlife

Many hundreds of thousands of seabirds die each year thanks to oil being illegally dumped in the oceans.

Although it is often the major oil spills from tanker wrecks that make the headlines, one of the worst problems is ships deliberately dumping their bilge oil.

IFAW's Emergency Relief Team regularly attends oil spills all round the world to set up rescue and rehabilitation operations for wildlife caught in these disasters.



© IFAW/Stewart Cook

## Noise Pollution

Man-made noise pollution is also a serious threat to marine mammals. Whales, dolphins and other species can suffer serious effects disturbing their behaviour. Sometimes it can lead to serious injury or death.

Scientists are working to understand the effects of this noise pollution on marine life and researching how best to reduce and regulate the problem. The research vessel *Song of the Whale* is at the cutting edge of this kind of work. (see page opposite)

One of the most crucial steps in protecting the oceans and marine wildlife is finding out exactly what is going on through research.

# Learning

## About our Marine Wildlife

**F**or more than 20 years, IFAW's research vessel *Song of the Whale* has traveled the world providing a unique platform for marine research and education. Studies by the team on whales and other marine animals such as dolphins, porpoises, seals and basking sharks play an important role in their conservation and protection. Key to this is an understanding of their distribution, numbers, and raising awareness of the threats they face such as underwater noise.

## The Noisy Place Down Below

Sound travels a long way under water and oceans can be noisy places.

Marine mammals use sound in very different ways. Some whales produce songs that travel over vast distances underwater and dolphins and porpoises use echo-location, like bats, to locate food and find their way.



© IFAW/Richard Sobol

The *Song of the Whale* scientists have developed expertise in using underwater microphones (hydrophones) to listen to and record the sounds that the animals make. This helps them to track, identify and survey different species.

One of the threats facing whales and other marine animals is noise pollution in the seas, such as noise from ships, drilling, military activities, oil and gas exploration and coastal construction. This noise can cause great distress to whales and dolphins and can result in injury and even death.

One of the latest research projects is into beaked whales in the North Atlantic.

There are about 20 species of beaked whales, making up about a quarter of all known whale species. They dive very deep and eat mostly fish and squid. As their name implies they have a beak, which varies in size. They also have 'flipper pockets' on the sides of their body where they can tuck their flippers to help them swim better.

There is increasing evidence that beaked whales are particularly affected by man-made sounds, such as military sonar. It is feared this noise pollution may cause mass strandings. If the *Song of the Whale* team can track the whales and identify their habitats then hopefully the nature and location of disturbing noise can be changed.

## Finding Solutions

For a number of years the *Song of the Whale* team studied the North Atlantic right whale, which lives off the eastern coast of North America. This is one of the world's most endangered whales; only about 300 remain. The main threats

right whales face are being hit by ships or getting tangled in fishing gear. This work has led to a scheme to help solve the problem using acoustic buoys to listen for and locate

the whales, providing information for ships to reduce the chances of collisions. Without sufficient protection, it is likely that the North Atlantic right whale will become the first large mammal to go extinct in modern times.

The team has also studied the vulnerable populations of harbour porpoise in the Baltic Sea and off the northwest coast of Africa. Tens of thousands of harbour porpoises are unintentionally caught and killed each year in fishing nets. Work by the team has informed policy and legislation which should help to reduce this number.

## Close to Extinction

The Mediterranean monk seal, once common throughout the Mediterranean and the Atlantic coast of NW Africa is now the most endangered marine mammal in Europe. Biologists think there are fewer than 600 left today.

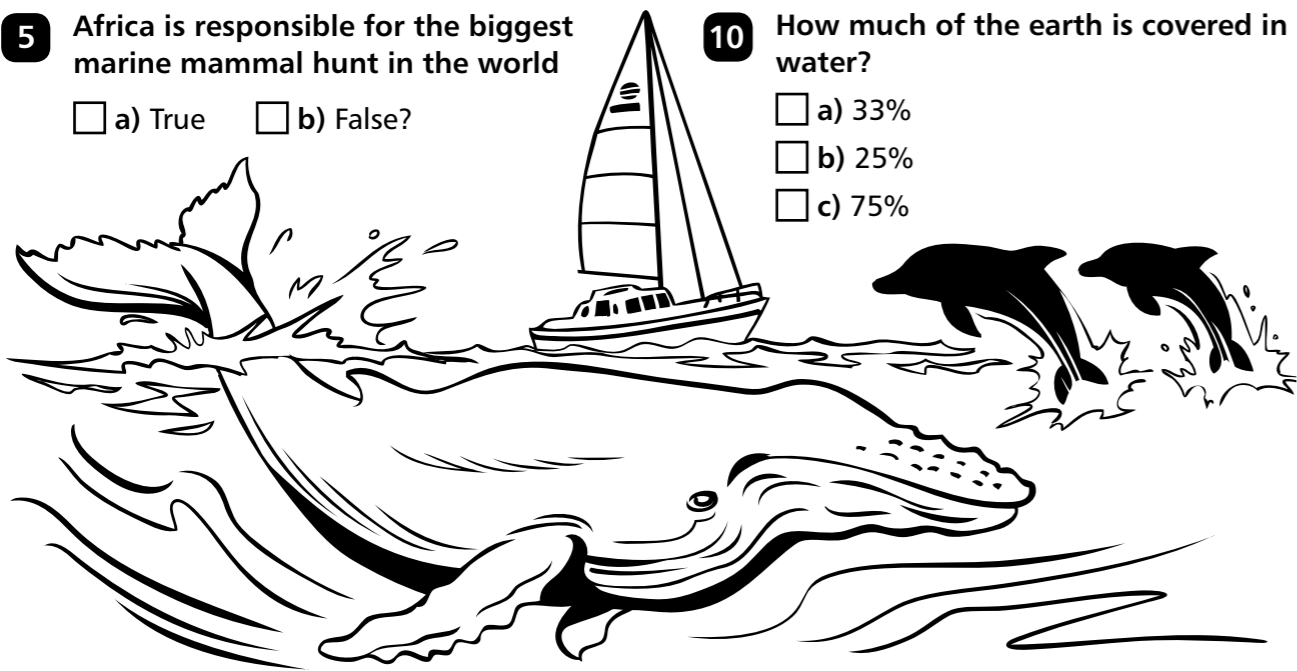
The *Song of the Whale* team carried out a survey in the eastern Mediterranean in 2007 and after searching for a week only spotted two seals.

# What's your score?

What do you remember about the film you have just seen?

Tick the correct answers below

- |                                                                                                                                                                                                                |                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>1</b> The earth was formed</p> <p><input type="checkbox"/> a) 4.5 billion years ago</p> <p><input type="checkbox"/> b) 4.5 million years ago</p> <p><input type="checkbox"/> c) 4 million years ago</p>  | <p><b>6</b> IFAW's research vessel is called:</p> <p><input type="checkbox"/> a) <i>Song of the Sea</i></p> <p><input type="checkbox"/> b) <i>Song of the Dolphin</i></p> <p><input type="checkbox"/> c) <i>Song of the Whale</i></p> |
| <p><b>2</b> Japanese and Norwegian whalers are expected to kill more than 2,000 whales in the next 12 months</p> <p><input type="checkbox"/> a) True <input type="checkbox"/> b) False</p>                     | <p><b>7</b> Dolphins and porpoises can find food using echolocation.</p> <p><input type="checkbox"/> a) True <input type="checkbox"/> b) False</p>                                                                                    |
| <p><b>3</b> More than 100 million sharks are killed every year</p> <p><input type="checkbox"/> a) True <input type="checkbox"/> b) False</p>                                                                   | <p><b>8</b> The North Atlantic right whale is not one of the world's most endangered animals</p> <p><input type="checkbox"/> a) True <input type="checkbox"/> b) False</p>                                                            |
| <p><b>4</b> The world's largest creature is</p> <p><input type="checkbox"/> a) the African elephant</p> <p><input type="checkbox"/> b) the blue whale</p> <p><input type="checkbox"/> c) the basking shark</p> | <p><b>9</b> Plastic lasts in the oceans for</p> <p><input type="checkbox"/> a) one week</p> <p><input type="checkbox"/> b) hundreds of years</p> <p><input type="checkbox"/> c) ten years</p>                                         |
| <p><b>5</b> Africa is responsible for the biggest marine mammal hunt in the world</p> <p><input type="checkbox"/> a) True <input type="checkbox"/> b) False?</p>                                               | <p><b>10</b> How much of the earth is covered in water?</p> <p><input type="checkbox"/> a) 33%</p> <p><input type="checkbox"/> b) 25%</p> <p><input type="checkbox"/> c) 75%</p>                                                      |



Answers: 1 a; 2 True; 3 True; 4 b; 5 False; 6 c; 7 True; 8 False; 9 b; 10 c.

## Activity 2 How blue whales measure up

A mathematical and science activity with an animal welfare theme.

### Learning outcomes

At the end of this activity students will:

- understand some biology of the blue whale – the world's largest mammal – and have practiced some mathematical techniques such as accurate measurement and the calculation of ratios using the size of the blue whale and other comparative objects
- understand that the blue whale is a baleen whale, how it gathers its main food (krill) and will be able to understand how the way it gathers its food is different from a toothed whale such as the killer whale
- understand that many whales are endangered and that despite this they are still hunted
- understand that hunting is an animal welfare issue because of the pain caused to whales and the length of time it takes a whale to die after being harpooned.



© IFAW/Claire Lacey

### Resources

You will need:

- enough rope or string to form the length of a blue whale – 32 metres (max) (105 feet)
- enough rope or string to form the width of a blue whale – 20 metres (max) (66 feet)
- student notes of blue whale and killer whale on page 13
- calculators, notepads/clipboards for students
- weights and lengths of some objects that you would like students to compare with the size of the blue whale for any ratio work.

### Part one

- Invite students to tell you what they think they already know about whales – drawing out what they have gathered from the IFAW film and any pre-knowledge. Explain, if there is doubt, that whales are mammals and part of the group known as cetaceans which also includes dolphins.
- Explain that the blue whale is the earth's largest animal and give some details about it using the fact file on page 12.
- Point out that the blue whale is a baleen whale rather than a toothed whale like a killer whale. Invite pupils to explain the difference – some might already be aware. In summary, a baleen whale has a throat that expands, enabling it to take in huge gulps of food-laden water before expelling the water through furry comb-like baleen plates which filter out the food – small fish or plankton – and then gulping it down.



© IFAW/Clodagh Collins

The baleen is made of keratin, a substance also found in fingernails and the hooves of horses and cows. If time permits you could conduct a simple experiment to show how the baleen works by filling a bowl of water, dusting the top with pepper and running a comb through the surface. The comb picks up the black pepper just as the baleen picks up food.

- Explain that the blue whale's main food is krill and it will eat up to four tonnes a day (as much as the weight of an elephant) that it filters through its baleen. For a comprehensive explanation of krill, visit: <http://animals.nationalgeographic.com/animals/invertebrates/krill.html>
- Explain that the blue whale was hunted nearly to extinction for its blubber, bones and other body products for many years from the mid 1800s until it was protected by international law in 1966.
- Point out that nearly 350,000 blue whales had been killed during this time. Today there are only around 5,000-12,000 whales worldwide. Remind them that as they have seen on the film some countries still hunt some whale species even though it is against the law.
- Point out that, as the film has shown, whales are hunted and killed by harpoons. After harpooning whales can take more than an hour to die.

### Useful websites

The websites listed below also contain useful background info and photographs and diagrams of the animals.

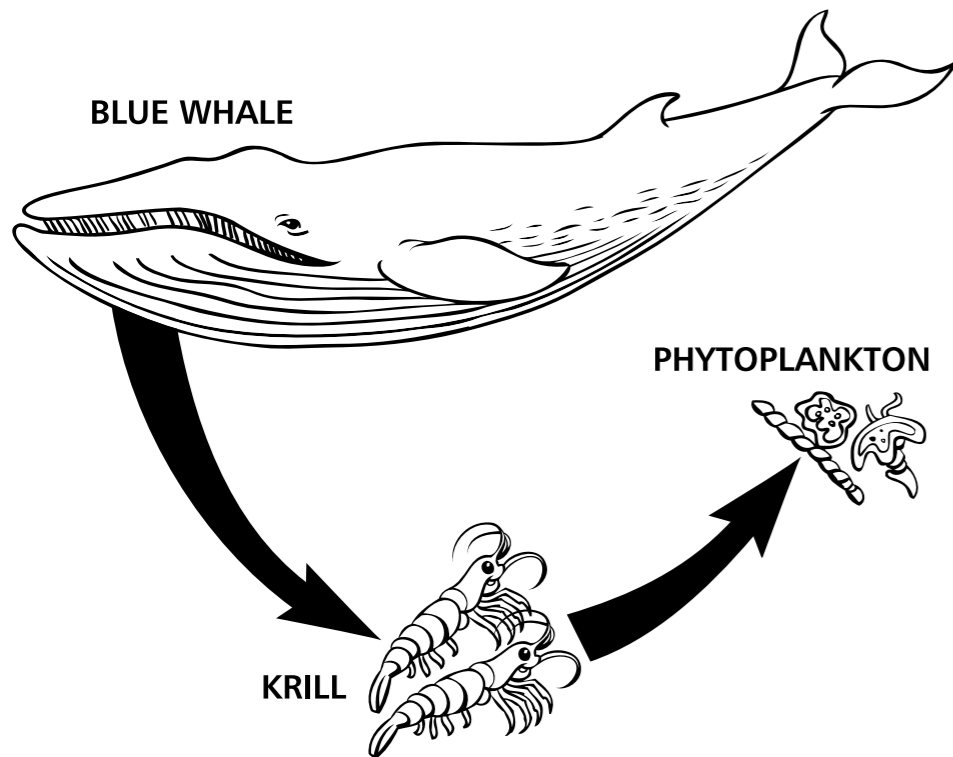
- <http://www.afsc.noaa.gov/nmml/education/cetaceans/blue.php>
- <http://www.enchantedlearning.com/subjects/whales/species/Bluewhale.shtml>
- <http://www.enchantedlearning.com/subjects/whales/species/Orca.shtml>
- [www.discoveringantarctica.org.uk/multimedia/flash/foodfreezer.swf](http://www.discoveringantarctica.org.uk/multimedia/flash/foodfreezer.swf)
- <http://animals.nationalgeographic.com/animals/invertebrates/krill.html>
- <http://animals.nationalgeographic.com/animals/mammals/blue-whale.html>
- <http://animals.nationalgeographic.com/animals/mammals/killer-whale.html>

### Part two

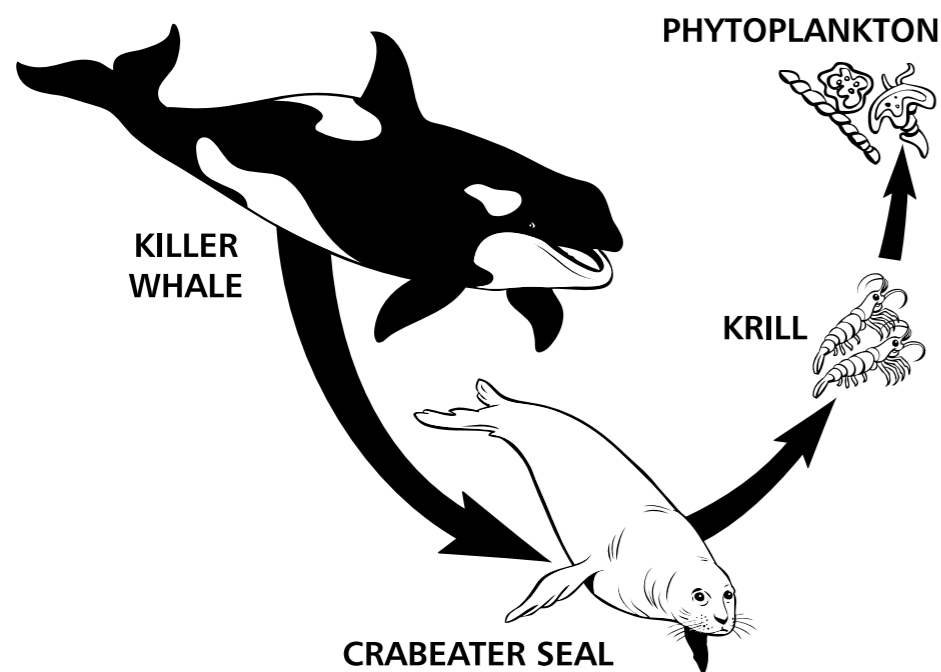
- Using a large outside venue such as a sports field or playground, the brightly coloured rope or string, facts and diagrams from this booklet, or the websites above, work with the group and a calculator to form a blue whale using the string/rope and their own bodies to represent other lengths and weights of the whale's body parts. Students will need to be aware of their own heights and weights.
- You may also like students to research some other items in advance of the lesson to arrive at comparative sizes and ratios. For example: estimated lengths and weights of the biggest dinosaur; the length and weight of a mid-size car; the length of their classroom; gardens; street. Could the size (height/weight) of an elephant to a blue whale (expressed in ratios) be an equivalent ratio of a rabbit to a human?

# About blue whales

## A simple food chain of the blue whale



## A simple food chain of the killer whale



## FACT FILE

### Blue whale

- Lifespan: believed to be around 80–110 years old
- Length: 25–32 metres (82–105 feet) long – about as long as three school buses
- Weight: 181,437 kg (399,996 lbs) (around the weight of 25 bull elephants)
- Flippers: 3–4 metres (9.8–13.1 feet) long
- Width between fins: 20 metres (65.6 feet)
- Height of blue whale lying on its side: Around 3 metres (9.8 feet) high
- Blue whale tongue weight: 2.7 tonnes (2.6 tons) – 50 people could stand on it
- Heart: 908 kg (2001.8 lbs) – the weight of a small car like a Volkswagen beetle
- Arteries: a small person could crawl through them
- Brain: 12.5 kg (27.6 lbs)
- Blue whales can reach speeds up to 50 km/hr (31 mph) over short distances

## Activity 3 The right side?

A speaking and listening activity designed to encourage debate on animal welfare issues.

### Learning outcomes

At the end of this activity students will:

- understand the concepts of Port and Starboard (left and right) of a ship
- understand the role of the *Song of the Whale*
- have practiced key speaking and listening skills through taking part in debates centred upon nine statements relating to animal welfare and environmental issues
- have achieved an understanding of the different views people might have on these issues.

### Resources

You will need:

- *Song of the Whale* section of this booklet (page 9) for reference
- whale rope/string length and width from last exercise – if remaining outside.



### Activity

- While staying outside, gather the group together, and reduce the width of the whale until it is about 5–6 metres (16–20 ft) wide and the length to 21 metres (69 ft) – the size of the *Song of the Whale*.
- Remind the group of the IFAW ship: the *Song of the Whale* which they have seen in the film.
- Ask for a quick recap of *Song of the Whale's* function (use page 9 of this booklet as a prompt if necessary) and ask why they think the work of *Song of the Whale* is important.
- Invite them to tell you what Port (left) and Starboard (right) means in terms of nautical directions and ask everyone to remember what these directions mean
- Ask them to imagine that the whale outline (length and width) has now become the outline of the *Song of the Whale*. If they disagree with a statement you read out about the welfare of marine wildlife they should go to the Port (left) side and if they agree the Starboard (right) side.



- Read out each statement in turn encouraging students to go to Port and Starboard. Invite different students to explain why they have made a decision or agree with a particular statement. Explain that it is Ok for other students, after hearing their classmates' points of view, to change their minds and move to a different side of the imaginary ship.
- At the end of the activity, summarise the positions that the class members took and use the relevant sections of the booklet to remind them of the impact of human actions on wildlife.

### Statements

- Endangered marine animals don't need to be protected by law
- Endangered land animals do.
- Killing whales, sharks and turtles for food and other products is no different to killing farm animals for meat and leather.
- We should stop polluting the oceans to protect wildlife.
- There is a lot that we as young people can do to protect the oceans and the animals that live there.
- Governments of countries that are against whaling should not trade with countries that still hunt whales.
- Supermarkets and shops should stop using plastic bags.
- It's Ok to drop litter because someone will clean it up eventually.
- It is acceptable for people to kill seals, whales and other sea creatures that traditionally they have always hunted.
- It is acceptable for someone to break the law to try to stop hunters killing seals and whales.

## Teachers' Notes

### Activity 4

# Marine animals and the law

An activity which explores how animal welfare is of concern internationally.

#### Learning outcomes

At the end of this activity students will:

- understand how seals are under threat around the globe
- understand the role of international and national laws in protecting them
- understand the role of pressure groups in protecting seals and other animals whose welfare is compromised.

#### Resources

You will need:

- internet/library access if the students will be doing this project during class time
- useful weblinks
- introductory seal facts from the panel in this page.



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#### Seals and the law – helpful hints

- Harp seals are not endangered but they are hunted in Canada.
- Cape fur seals from southern Africa are on the endangered list, but are hunted for their fur and other products mostly by companies in Namibia.
- Various countries have banned seal products including Belgium, Holland, Croatia, the USA and Mexico.
- Current EU rules impose a ban on seal products from newborn harp seals less than 12 days old and young hooded seals less than one year old. There is no EU-wide protection for adult seals.
- The USA and South Africa have banned the commercial hunting of seals.
- Monk seals both Mediterranean and Hawaiian monk seals are endangered – there are only around 500 monk seals left in the Mediterranean.

#### Part two

- Invite members of the class to report back what they have found and ask them to consider what, other than laws, can help to protect animals under threat.
- Encourage them to think about issues such as consumer action, pressure group action etc.
- If the class is not yet fully aware of the functions of pressure groups and non-governmental organisations (NGOs) use the IFAW website [www.ifaw.org](http://www.ifaw.org) to explain how pressure groups represent different interests in lobbying governments for change and how they can encourage the public to take action.
- Encourage the students to understand that just as there are pressure groups working to protect animals like seals there will be pressure groups campaigning to allow hunting and the trade in their products to continue.

#### Additional homework/extension activity

- Invite the students to research pressure groups that work for the protection of the seals and those that work against them and find three arguments put forward by each side.

#### Useful websites

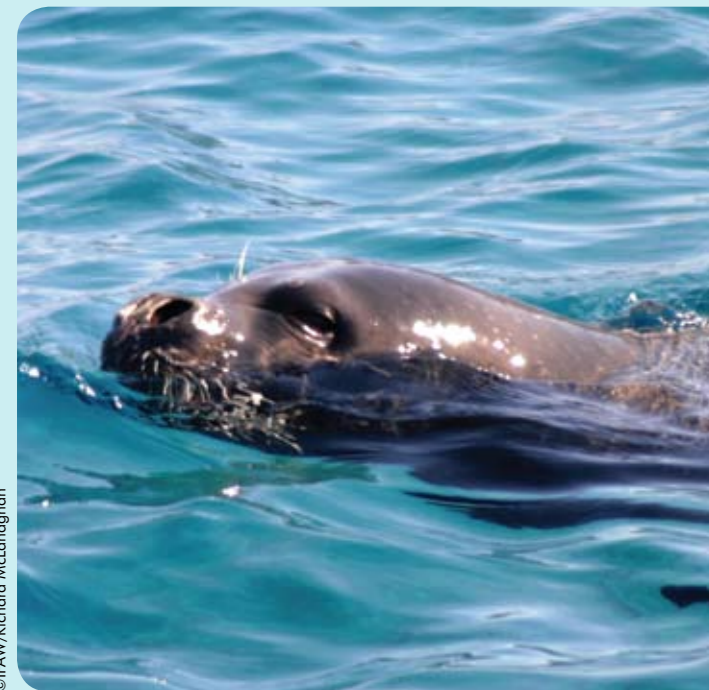
<http://www.ifaw.org/ifaw/general/default.aspx?oid=208064>

[http://www.kintera.org/site/c.gjIM12PKKqG/b.3931811/k.9C15/Trade\\_Bans\\_on\\_Seal\\_Products.htm](http://www.kintera.org/site/c.gjIM12PKKqG/b.3931811/k.9C15/Trade_Bans_on_Seal_Products.htm)

[http://www.kintera.org/atf/cf/%7B0DE43253-E1EF-4866-97B9-C346879B0698%7D/CS\\_SEALS\\_SEALING.PDF](http://www.kintera.org/atf/cf/%7B0DE43253-E1EF-4866-97B9-C346879B0698%7D/CS_SEALS_SEALING.PDF)

[http://www.hsus.org/about\\_us/humane\\_society\\_international\\_hsi/seal\\_trade\\_ban/bans\\_of\\_seal\\_products.html](http://www.hsus.org/about_us/humane_society_international_hsi/seal_trade_ban/bans_of_seal_products.html)

[www.nationalgeographic.com](http://www.nationalgeographic.com) (insert 'seal cull' in the search engine)



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#### Part one

- For either homework or in class time ask the students to find out, using the internet and other facilities open to them, if the way seals are treated around the world is an animal welfare issue of international concern.

#### Ask them to investigate:

- if seals are threatened – on any endangered species lists etc
- if so, how seriously they are threatened
- what has been agreed in terms of international law to protect seals and by whom?
- how easy is it to enforce international laws to protect animals?

## Teachers' Notes

### Activity 5

# Drama in Turtletown

This activity links with Drama and English curricula

#### Learning outcomes

At the end of this activity students will:

- have made, performed and evaluated a piece of drama using a local newspaper story as a stimulus
- have considered and dramatised the different perspectives and points of view within the story
- understand the animal welfare and environmental issues affecting turtles.

#### Resources

You will need:

- *Developing town kills turtles* handout on page 16.

#### Activity

- Give the students the imaginary local newspaper handout on page 16.
- Read it through with the class and divide them in to groups of six.
- Explain to the students that you would like them to prepare a short dramatic piece of two to three minutes long.
- Explain that they have two choices. They can do the piece in a structured, literal way where each person takes a role from the list below. They then should act out the public meeting where they should put across their point of view regarding protecting the turtles.



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**The roles are:** IFAW campaigner; Mayor of local town; property developer who stands to make a lot of money from hotel development; a local teenager who is the president of his or her student council who volunteers regularly to keep people away from turtle nesting sites; the manager of the local supermarket who is the town's biggest user and supplier of plastic bags; Dr Powell the marine biologist.

- Alternatively they can choose a metaphorical interpretation production where the different people in the group can take roles of turtles, developers or even the abstract roles such as the ocean or the lights from the hotels.
- Invite those who choose the free-form approach to decide who the 'winners' in their production will be (the turtles, developers or both) and the consequences for those who cannot win.
- Give the groups ten minutes to prepare and then bring them back together to perform for each other.
- Ask them to evaluate each other's performances and summarise lessons learned.

## Teachers' Notes

### Activity 6

# Writing about a cause

This activity is a practical and research-based activity for English curricula

#### Learning outcomes

At the end of this activity students will:

- understand the principals of persuasive writing
- understand how specific organizations may use persuasive writing to engage people in supporting their cause
- have practiced these principals themselves through researching information and writing a persuasive letter which asks someone to take appropriate action to protect a particular marine animal they have chosen.

#### Resources

You will need:

- examples of persuasive writing – campaigning advertisements/direct mail packs/e-mail campaigns/website material used by various organisations; examples of persuasive writing from the IFAW website.



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#### Activity

- Explain to the students that organizations such as IFAW will often write to their supporters asking them for help with their campaigns to protect marine animals under threat.
- Using the packs as examples, explain that the art of persuasive writing is to use rhetorical questions, personal pronouns and emotive language backed up by facts and research from the different organisations.
- Invite the students to think of one of the marine animal welfare issues that was mentioned in the booklet, in the film or on the IFAW website and ask them to write a persuasive letter to an imaginary supporter explaining how their help is urgently needed to protect the marine animal under threat.
- Explain that they need to research their facts and be clear, before they start to write, about what they want the supporter to do. They could, for example, be asking the supporter to write to the leader of country asking them to introduce laws to protect a marine animal under threat.

## Teachers' Notes

### Activity 7

# Plastic soup

This activity, which explains why plastic is such a widespread and long-lasting pollutant with a grave impact on wildlife, can be used for science and geography curricula.

## Science and geography

### Learning outcomes

After this session students will:

- understand the properties of plastics and how, because of these properties, different forces can carry them around the oceans of the world
- understand the impact that carelessly disposed of plastic can have on marine wildlife
- understand how the movement of water in the world's oceans is caused by winds, tides and currents
- understand that winds, water temperature and the earth's rotation create currents and affect their flows
- understand that there are large currents in the world – called gyres – and be able to find them on a map and understand how the forces of the North Pacific gyre hold a plastic sea or soup
- achieve a basic understanding of the Coriolis Effect.

## Resources

You will need:

- a collection of plastic bottles; plastic bags; plastic bottle tops, floating plastic toys
- *Polluting the Oceans*, page 8 of the information booklet
- pictures from on this site of the impact of plastic in the sea on marine wildlife
- clear glass baking dishes (around 30cm x 20cm); electric fan; ping pong ball; coloured ice cubes (water coloured with different colour food colouring and frozen into trays); map of ocean currents from: <http://www.onr.navy.mil/focus/ocean/motion/currents1.htm>



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## Activity

- Invite students to tell you what they recall of the sections in the films and booklet page 8 relating to plastic pollution of the seas and the impact of plastic on ocean wildlife.
- Write their points in summary on the board referring to page 8 of the booklet where necessary and using the photographs linked with this site as a guide. Point out that hundreds of thousands of seabirds and tens of thousands of marine mammals die each year after swallowing or being entangled in marine debris.
- Hand out the news story – *Plastic soup* ([student notes](#)) and ask for the students' reactions.
- Using your collection of plastic ask the students to summarise the properties of plastic: it floats; is light, doesn't biodegrade easily etc.
- Explain that plastics – because of these properties – can be carried around the world's oceans because of the forces of **winds, currents and tides** and stay in the water for decades. Consequently, the impact of plastics on the ocean environment and the animals that live in it is great.
- Demonstrate the effects of **winds** on water and plastic through **Experiment 1**.

## Experiment 1

### Wind on the sea

- Fill a large clear glass shallow dish with water and set it on a table in front of the fan.
- When the water has settled, tell students to watch the water in the pan very closely.
- Turn on the fan at the lowest speed.
- Ask students what they see happening to the water surface.
- Turn the fan to the higher setting and then after a few seconds to the highest setting.
- Ask students to describe what happened to the surface of the water. Put a ping pong ball (or anything else light that floats) into the pan of water.
- Repeat the above exercise.
- Ask them to record the experiment and their conclusions. They should conclude that the stronger the wind, the faster the water moves and the bigger the waves created and the direction in which the ping pong ball is moved.



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## Activity 7 Plastic soup

- Ask them to record, make drawings of the experiment and their conclusions.
- Explain that the action in the pan mimics what is going on in the world's oceans. The oceans are made up of different temperatures – cold at the North and South poles (ice cubes) and warm at the equator (the warm tap water). Different temperatures affect the way water moves throughout the oceans and create currents which can move plastic debris about.

### Giant gyres

- Return to the map of the world's currents. Using the map explain that there are five giant circular currents in the world's oceans called gyres and there are five of them, North Atlantic, South Atlantic, North Pacific, South Pacific and South Indian. Ask the class to look at the patterns on the maps that show the direction of current flow. (They should see that currents in the Northern Hemisphere circulate clockwise; currents in the Southern Hemisphere move counter clockwise.)
- Explain that this opposite motion is called the Coriolis Effect. The Coriolis Effect means that because the Earth is spinning, surface waters move in a clockwise direction in the Northern Hemisphere and in a counter clockwise direction in the Southern Hemisphere. The currents eventually come into contact with the continents that deflect them, creating giant oceanic current circles known as gyres. The North Pacific gyre is where the plastic soup in the handout is located. There is little wind which means the current moves slowly and the plastic debris sits there as a slow moving and long-lasting hazard to wildlife.
- In conclusion, ask the class for their feelings about the plastic soup and their views on what can be done to solve the problem. Try to draw out points such as cutting consumption; tighter regulations and enforcement regarding the disposal of material at sea; the creation of biodegradable plastics, individual responsibility in not using or disposing of plastic safely.



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### Talking tides

- Using the summary box below explain that **tides** are another force that moves the sea. Involve the class in a discussion about what causes them and the effect that they have on moving plastic and rubbish around the world's coastlines. Invite the class to tell you about the impact that plastic moved by tides could have on marine wildlife that lives near the sea shore.

### Tide summary box

Tides are the regular rise and fall of the ocean's surface caused by the gravitational pull from the sun and the moon. The moon is nearer to the earth and so it exerts a stronger pull. The moon moves around the earth and when the sun, moon and earth are in line their gravities act together. This causes very high and low tides – the spring tides. When the sun and moon lie at right angles the pull is weaker and there are smaller tides – the neap tides. The following weblink provides useful diagrams and explanations: <http://oceanservice.noaa.gov/education/kits/tides/welcome.html>

### Currents

- Explain to the class that the other forces that move water around the world are **currents** which are like rivers of water travelling through oceans faster than other water around them.
- Show students the map of the main ocean currents: <http://www.onr.navy.mil/focus/ocean/motion/currents1.htm> and explain that ships sometimes lose their cargo at sea and that the cargo, if it floats, can be carried by currents to completely different parts of the world. Using the map point out that around 80,000 Nike trainers went overboard in May 1990, about 800 kilometres southeast of the Alaskan Peninsula. Six months to a year later, they began appearing on beaches of British Columbia, Washington, and Oregon.
- Invite the students to tell you what natural forces might contribute to the different directions of movement of ocean currents. Ultimately you should try to draw out the response that the forces in action to create currents are **wind**, (which they have already discussed above) **water temperatures** and the **rotation of the earth**.
- Invite them to conduct **Experiment 2**.

### Experiment 2

#### The effects of temperature on currents

- Divide the class into small groups of five. Give them each a clear dish that they should fill with warm tap water.
- Give each group **two** coloured ice cubes and ask them to put them in the water – **one at each end of the dish** – and watch what happens.
- They should see that that the cold (coloured) water sinks and moves along the bottom of the dish toward the warmer water in the middle; the warmer water moves toward the ends of the baking dish; as the cold water begins to warm, it begins to rise.



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### Useful weblinks

- [http://www.bbc.co.uk/scotland/education/bitesize/higher/geography/physical/atmosphere1\\_rev.shtml](http://www.bbc.co.uk/scotland/education/bitesize/higher/geography/physical/atmosphere1_rev.shtml)
- <http://oceanmotion.org/>
- <http://www.nationalgeographic.com/xpeditions/lessons/15/g68/seatoshiningsea1.html>
- [http://oceanservice.noaa.gov/education/kits/currents/supp\\_currents\\_roadmap.html](http://oceanservice.noaa.gov/education/kits/currents/supp_currents_roadmap.html)

# Townsville News

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■ Plastic waste floating in the Pacific Ocean

## Plastic soup

The world's rubbish dump: a garbage tip that stretches from Hawaii to Japan

A 'plastic soup' of waste floating in the Pacific Ocean is growing at an alarming rate and now covers an area twice the size of the continental United States, scientists have said.

The vast expanse of debris – in effect the world's largest rubbish dump – is held in place by swirling underwater currents. This drifting 'soup' stretches from about 500 nautical miles off the Californian coast, across the northern Pacific, past Hawaii and almost as far as Japan.

Charles Moore, an American oceanographer who discovered the 'Great Pacific Garbage Patch' or 'trash vortex', believes that about 100 million tons of flotsam are circulating in the region.

Marcus Eriksen, a research director of the US-based Algalita Marine Research Foundation, which Mr Moore founded, said yesterday: "The original idea that people had was that it was an island of plastic garbage that you could almost walk on. It is not quite like that. It is almost like a plastic soup. It is endless for an area that is maybe twice the size as continental United States."

Curtis Ebbesmeyer, an oceanographer and leading authority on flotsam, has tracked the build-up of plastics in the seas for more than 15 years and compares the trash vortex to a living entity: "It moves around like a big animal without a leash." When that animal comes close to land, as it does at the Hawaiian archipelago, the

results are dramatic. "The garbage patch barfs, and you get a beach covered with this confetti of plastic," he added.

The 'soup' is actually two linked areas, either side of the islands of Hawaii, known as the Western and Eastern Pacific Garbage Patches. About one-fifth of the junk – which includes everything from footballs and kayaks to Lego blocks and carrier bags – is thrown off ships or oil platforms. The rest comes from land.

Mr Moore, a former sailor, came across the sea of waste by chance in 1997, while taking a short cut home from a Los Angeles to Hawaii yacht race. He had steered his craft into the 'North Pacific gyre' – a vortex where the ocean circulates slowly because of little wind and extreme high pressure systems. Usually sailors avoid it.

He was astonished to find himself surrounded by rubbish, day after day, thousands of miles from land. "Every time I came on deck, there was trash floating by," he said in an interview. "How could we have fouled such a huge area? How could this go on for a week?"

Mr Moore, the heir to a family fortune from the oil industry, subsequently sold his business interests and became an environmental activist. He warned yesterday that unless consumers cut back on their use of disposable plastics, the plastic stew would double in size over the next decade.

According to the UN Environment Programme, plastic debris causes the deaths of more than a million seabirds every year, as well as more than 100,000 marine mammals. Syringes, cigarette lighters and toothbrushes have been found inside the stomachs of dead seabirds, which mistake them for food.

Plastic is believed to constitute nearly 90 per cent of all rubbish floating in the oceans. The UN Environment Programme estimated in 2006 that every square mile of ocean contains 46,000 pieces of floating plastic.

The full version of this story appears at: <http://www.independent.co.uk/environment/the-worlds-rubbish-dump-a-garbage-tip-that-stretches-from-hawaii-to-japan-778016.html> and is reproduced here with kind permission of The Independent [www.independent.co.uk](http://www.independent.co.uk)

### Activity 8

# Student waste audit

## Your school can do it!

This student activity is linked with the IFAW clean up campaign and the four-page schools leaflet included in the IFAW Animal Action Week mailing.

In this activity students carry out an audit of the school waste. Correct procedures and guidelines (including parental permissions and health and safety) for conducting such audits are available from: [youthxchange](http://youthxchange.net). This project is run by: the United Nations Environment Programme (UNEP) and the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Visit: [http://www.youthxchange.net/main/e\\_cw\\_004schoolwasteaudit.asp](http://www.youthxchange.net/main/e_cw_004schoolwasteaudit.asp) for more indepth information but effective school waste audits usually cover the points outlined below.

- What is in each department's/area's waste bins at the end of a day?
- Which areas produce the most waste and why?
- What does the waste actually contain?
- How is the school's waste disposed of and where does it end up?
- What is the school's recycling policy?
- What percentage of waste is actually recycled and where does it go?
- How is the school discouraging the unnecessary use of plastic bags, cups, packaging etc?
- What areas can be improved in terms of reducing, reusing, and recycling waste?

If areas for improvement can be found students working with designated members of staff can draft a new policy to recommend and present to the head teacher and the school's governing body.

When the new policy has been accepted the school should contact the local media with what has been achieved not only to get publicity for their own school but to encourage other schools and businesses to follow suit.



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## Extra reading

### – with an ocean theme

**Please note:** publishers vary from country to country so it is best to do a title and author search at your library or on-line bookshop.

#### Non Fiction

Title	Author
<i>Eyewitness Guides: Whale</i>	Vassili Papastavrou
<i>Eyewitness Handbook Whales, Dolphins and Porpoises</i>	Mark Cawardine
<i>Turtle Rescue: Changing the Future for Endangered Wildlife</i>	Pamela Hickman
<i>Whale Rescue: Changing the Future for Endangered Wildlife</i>	Erich Hoyt
<i>National Geographic Face to Face with Dolphins</i>	Flip Nicklin
<i>Soul Surfer</i>	Bethany Hamilton
<i>Oceans Atlas</i>	John Woodward
<i>Shipwreck Detective</i>	Duncan Cameron and Richard Platt
<i>Hook, Line, and Seeker: A Beginner's Guide to Fishing, Boating, and Watching Water Wildlife</i>	Jim Arnosky
<i>Paper or Plastic: Searching for Solutions to an Overpackaged World</i>	D Imhoff
<i>Reduce, Reuse, Recycle!: An Easy Household Guide</i>	Nicky Scott
<i>The Little Book of Living Green</i>	Mark Hegarty
<i>Tracking Trash – Flotsam, Jetsam and the Science of Ocean Motion</i>	Loree Griffin Burns
<i>Draw 50 Sharks, Whales, and Other Sea Creatures</i>	Lee J Ames and Warren Budd
<i>Freeing Keiko: The Journey of a killer whale from Free Willy to the wild</i>	Kenneth Brower

#### Fiction

Title	Author
<i>Why the Whales Came</i>	Michael Morpurgo
<i>Aquamarine</i>	Alice Hoffman
<i>Swallows and Amazons</i>	Arthur Ransome
<i>The Old Man and the Sea</i>	Ernest Hemingway
<i>The Wreck of the Zanzibar</i>	Michael Morpurgo
<i>Exodus</i>	Julie Bertagna
<i>My Old Man and the Sea: a Father and Son Sail around Cape Horn</i>	David Hays
<i>Moby Dick</i>	Herman Melville
<i>The Young Man and the Sea</i>	WR Philbrick
<i>Night of the Whale</i>	Curry Loddington
<i>Whalesinger</i>	Welwyn Wilton Katz
<i>Island of the Blue Dolphins</i>	Scott O'Dell
<i>The Problem with Paradise</i>	Lesley Dahl
<i>Changes in Latitudes</i>	Will Hobbs
<i>Free Willy</i>	Nancy Krulik

# Take action!

There are lots of simple things we can do to protect the world's oceans. Remember everything that we use, whether we live hundreds of kilometres from the coast or on the coast itself, has the potential to impact upon the sea and the creatures that live in it. By cutting down on waste generally, refusing plastic products, and actively recycling – no matter where we live – we can make a difference...

- If you live in an area where the local authority picks up recyclables from your door or kerbside, make sure you use this service. If not, take your recyclables to the nearest recycling scheme.
- Don't accept plastic bags when you go shopping – take fabric ones with you instead.
- Avoid disposable batteries – use rechargeable ones with solar powered rechargers.
- Buy loose fruit and vegetables rather than packaged goods.
- Buy cotton cloths for the kitchen clean-up instead of paper towels.
- Buy drinks and other liquids in glass bottles wherever possible.
- Repair your electrical appliances wherever possible rather than buying new ones.
- Buy reconditioned appliances rather than new if you can.
- Start plastic, can and paper-recycling schemes at school, home or work



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- Recycle your inkjet cartridges.
- Don't throw away old computers – sell them, donate them to charity, donate to someone else or recycle them.
- Stop your old mobile phone or printer cartridges going to landfill by sending them to charities that will recycle and re-sell them.
- Reduce junk mail and the plastic wrapping it comes in by registering with a Mailing Preference Service if your country has one.
- Make your own lunch rather than buying sandwiches in plastic packaging from shops.
- Join a toy library to borrow toys. Pass on old toys to other families.
- Avoid single-use cameras.
- Rent videos and DVDs rather than buying them.
- Use cloth nappies for babies rather than disposable ones.
- Give cinema or concert tickets as gifts instead of disposable goods.
- Give your old glasses (spectacles) to charities and opticians who will send them to needy people around the world.
- Find out about recycling schemes for unwanted CDs in your area.
- Encourage your school or work place to use reusable cups rather than disposable ones.



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