

# Ocean 11

## Whales 2

# Bay of Fundy



The Bay of Fundy is a 170-mile-long (270 km), straight-sided, somewhat funnel-shaped bay which splits at its northeastern head into two narrow bays, Chignecto Bay and the Minas Basin. It was formed as the continental plates parted millions of years ago. As they split, deep rift valleys formed, which quickly filled with sediment washed in from the land. The Bay of Fundy is one of these ancient rifts.

The Bay of Fundy is an eco-attraction on par with such marvels as the Great Barrier Reef of Australia and the Rain Forest of Brazil.

Its mighty tides are the greatest on earth. Every day, twice daily, one hundred billion tons of seawater roll in and out of the Bay.

At low tide, you can literally walk on the ocean floor.

At high tide, just six hours later, your footprints will be covered by the ocean. In some places, the vertical difference between high and low tide is 14 meters - roughly the same height as a four storey building!

## Video: Bay of Fundy Tides



In Micmac lore, it was a giant whale, who angered the god Glooscap and created such a splash with his mighty tail, that the water sloshes back and forth to this day.

In actuality, the story of the tremendous Bay of Fundy tides is no less the stuff of legends.

Some 350 million years ago, it was not Glooscap, but rather the sun and moon who conspired to create this awe-inspiring natural phenomenon. That is, some 100 million years before the first dinosaurs roamed the earth, this pulsing arm of the North Atlantic was formed, its unique shape amplifying the tides to staggering proportions.

Fundy's onslaught of water every 12 hours and 30 minutes is estimated to nearly equal the 24 hour flow of all the rivers in the world! How nutrient-rich are Fundy's waters? In just two weeks, sandpipers feeding on Fundy shores will double their weight! Bon appetit!!

The rich feeding grounds around the Fundy Isles in southwestern New Brunswick make the Bay of Fundy one of the world's most accessible sites for viewing marine mammals. Every summer whales of all sizes (up to 15 species of toothed and baleen whales) come to the Bay of Fundy, one of the marine wonders of the world, to mate, play and feast on the bountiful supply of food churned up twice a day by the powerful tides.

The stirring of deep nutrient-rich water into shallow surface water causes immense blooms of plankton- passively floating food that nourishes all marine life.

The water may rise and fall as much as 50 feet (16m) each day.



The great tides of the Bay of Fundy are due to two unique characteristics of this finger of the Gulf. The bay itself is U-shaped, and tapers significantly at its northernmost end. Naturally, as the tide flows into the Gulf of Maine and enters the Bay of Fundy, it rises up in response to this constriction.

Furthermore, the time it takes for the tide to move up the Bay of Fundy is nearly identical to the time it takes for the tide to come in from the open Atlantic. This means that the tide's range is amplified, similar to the effect produced by children sloshing water into waves in a bathtub.

These two factors, combined with several other lunar features, make the tides of the Bay of Fundy a natural wonder of the world.

Weathered headlands



Drawn by the rich waters flowing from the Bay of Fundy and the resulting abundance of phytoplankton and fish in the area, the whales — such as humpback, minke, sei, and the rare right whale — come to feed and court. Recognizing the vital role the waters around Grand Manan Island play in the life cycle of the endangered right whale, the Canadian government established a seasonal Conservation Area from June to October each year.



## Whales of the Bay of Fundy

**Right Whale**  
Southern Right whale (*Eubalaena australis*)  
Northern Right whale (*Eubalaena glacialis*)

Right Whales were regarded by Nineteenth century whalers as the 'right' whales for their industry.

By the 1860's their numbers were so severely depleted that whalers could no longer hunt them profitably. From an estimated world population of 100,000 whales, 30,000 were taken from Australian and New Zealand waters alone.

Today the world population numbers about 2,000 of which 500 visit southern Australian waters to mate and breed. It is feared that the eastern American stock, now less than 300, is in great danger of extinction due to the accidental deaths of right whales involved in shipping accidents.

All Right whales are protected internationally under the convention for the regulation of whaling and have not been actively hunted since 1935.

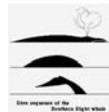
The whales migrate to warmer temperate waters to give birth and mate. They also teach their young how to swim in the warm sheltered waters. The new-born calves have virtually no blubber to insulate them from the cold. They are fattened on rich whale milk which has a 40% fat content. This produces spectacular results and whale calves may double their weight within a week. However, there is no food here for the mothers, who must fast while they raise their young.

Most births occur in early winter, after which the adults begin their courtship displays of breaching, tail splashing, jostling and caressing.

Calves stay close to their mothers, suckling for a year or less and playing together. Calves learn skills they need to survive in one of our planet's great wilderness areas, the Ocean.

Length: 15-18 metres (60-72 feet) Life-span: 40 years

Right Whale



**Sei Whales**  
(*Balaenoptera borealis*)

The Sei whale closely resembles the Bryde's whale in both size and appearance. From a distance it is almost impossible to tell them apart. This whale grows to a length of 12-17m (36-51ft) and weighs 20-30 tonnes. The Sei whale is called a "rorqual" a Norwegian word for "furrow" and refers to the pleated grooves running along its under-belly. These throat grooves, which extend from the lower jaw to the navel, in addition to streamlining the shape of the whale, allow the throat area (cavum vent-rale) to expand tremendously during feeding.

Most Sei whales live in the Southern Hemisphere while smaller populations inhabit the North Atlantic and North Pacific. There appears to be little or no mixing between the northern and southern populations. They are not normally found in extreme polar areas, although the subarctic and the subantarctic are favoured feeding grounds. They migrate from these polar and cold temperate feeding grounds to tropical to warm temperate breeding grounds. Sporadic annual invasions at specific locations are known as "Sei whale years" but are not easy to predict. May be seen around islands but is rarely found close to shore elsewhere.

Sei whales were heavily exploited by the whaling industry, especially during the 1960's and early 1970's and the population has been severely depleted. Estimates place the original number of Sei whales at 256,000 with current figures standing at 54,000 that's just 20% of nature's intention. Now on the endangered list, the Sei whale is protected (since 1986) worldwide by international law. It is not to be hunted by anyone for any reason.

Painting by Richard Ellis

**The Blue Whales**  
(*Balaenoptera musculus*)

The Blue whale is, and always has been, the largest animal ever to exist on earth. This whale can grow to a length of 33m (110ft) and weigh 190 tonnes but on the average it is much smaller. The Blue whale is called a "rorqual" a Norwegian word for "furrow" and refers to the pleated grooves running from its chin to its navel. The throat grooves, in addition to streamlining the shape of the whale, allow the throat area (cavum vent-rale) to expand tremendously during feeding, and can hold 1,000 tons or more of food and water when fully expanded. By taking tonnes of water into its mouth and filtering out the fish or krill with its baleen plates a medium-sized Blue whale can eat over 4 tons of krill a day.

Most Blue whales live in the Southern Hemisphere while smaller populations inhabit the North Atlantic and North Pacific. They migrate long distances between low latitude winter mating grounds and high latitude summer feeding grounds and are often seen in parts of California, Gulf of California (Sea of Cortez), Gulf of St. Lawrence, Canada and the northern Indian Ocean.

Before man's intervention there were 228,000 Blue whales swimming the oceans of the world. Between 1904 and 1978, whalers scoured the seas for this huge cetacean, most were taken in the southern hemisphere, many against the law. Current figures suggest that a mere 11,700 animals are left. As the population figure suggests, it was ruthlessly and relentlessly slaughtered for every reason imaginable, almost to the point of extinction. Now on the endangered list, the Blue Whale is protected (since 1967) worldwide by international law. It is not to be hunted by anyone for any reason at all. Suggestion are that some populations may never recover.

Lifespan 35-40+ years.

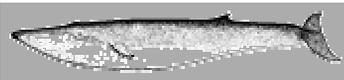
**Finback Whales**  
(*Balaenoptera physalus*)

The Fin whale is the second largest animal after the Blue Whale. It can grow to a length of 26m (85ft) and weigh 30-50 tonnes but on the average it is much smaller. The Fin whale is called a "rorqual" a Norwegian word for "furrow" and refers to the pleated grooves running from its chin to its navel. The throat grooves, in addition to streamlining the shape of the whale, allow the throat area (cavum vent-rale) to expand tremendously during feeding. This allows the taking in of tonnes of food-laden water which is then discarded through their baleen plates leaving the fish or krill for swallowing. This efficient system enables the largest animals on earth to feed on some of the smallest.

Fin whales are most common in the Southern Hemisphere while smaller populations inhabit the North Atlantic and North Pacific. Some populations migrate between warm, low latitude winter mating grounds and cooler, high latitude summer feeding grounds though their movements are less predictable than other large whales. Some lower latitude populations, such as in the Gulf of California (Sea of Cortez) and Mexico seem to be resident all year round. In these areas they can be found in offshore waters but may be seen close to the shore where the water is deep. The Fin whale is the only rorqual commonly found in the Mediterranean. It is least common in the tropics and will enter polar waters, but not as often as Minke or Blue whales.

Once one of the most abundant of the large whales, the Fin whale was heavily exploited by the whaling industry and its population has been severely depleted. The Fin was the first species to be hunted with the harpoon gun. Pre-whaling estimates indicate that there were 300,000-500,000 Fin whales swimming the oceans of the world. Current figures suggest that a mere 123,000 animals are left. Iceland was the last country to cease the killing of Fin whales. In 1989, Iceland was forced (financially) by worldwide public opposition to forestall it's Fin whale hunt. There are indications that Iceland is planning to kill 200 Fin whales annually as it believes this would be a sustainable harvest

Finback Whale



**Humpback Whales**  
(*Megaptera novaeangliae*)

The Humpback whale is one of the most energetic of the rorquals. It is known for its spectacular breaching, flipper-slapping and lobtailing. It is easily identified at close range by its knobly head and long flippers. The black and white colouration on the underside of the flukes (tail) allows scientists to distinguish and name individuals all around the world. No two Humpback whales are exactly alike.

During breeding season the Humpback males are known for singing the longest and most complex songs in the animal kingdom. Humpbacks are highly inquisitive and will approach quite closely, showing little fear of boats.

Humpback whales are wide ranging and can be found virtually worldwide, but with apparent geographical segregation between at least ten populations. Although some mixing does occur between these populations there has probably never been any contact between the Northern and Southern hemispheres. Humpbacks are strongly migratory, seasonally migrating from polar feeding grounds to warm temperate to tropical breeding grounds.

Estimated at around 10,000 individuals worldwide the Humpback is an 'Endangered Species'. The healthiest populations occur in the western north Atlantic Ocean. A few other areas, include the waters near Beguia, Cape Verde, Greenland, and Tonga.

Due to their tendency to aggregate on the tropical breeding grounds and to come close to the shore on the polar feeding grounds the Humpback whales were highly vulnerable to whalers. It is likely that more than 100,000 Humpbacks were killed by whalers throughout the modern whaling era and, although some stocks seem to be recovering, today's population is still a fraction of its original size. Humpback whales received protection in 1966 and again in 1983 when the International Whaling Commission instituted a moratorium on commercial whaling.

Length: 12-15 metres (40-60 feet) Life-span 70-80 years.

Humpback Whale



Dorsal profile of the Humpback whale



Minke Whale  
(*Balaenoptera acutorostrata*)

The Minke whale is the smallest of the rorquals. The male of the species can grow to a length of 9.8m (32ft) and the female larger at 11m (36ft) and weigh 10 tonnes. Populations in the Southern hemisphere on the average are slightly larger than other areas. Some animals are inquisitive and approach quite closely, but in most cases it is unusual to get a clear view. The Minke can be confused with the Sei, Bryde's, Fin or Northern bottlenose whale, however, the dive sequence is distinctly different, the head is unscarred and it's mouthline is relatively straight.

Minke whales can be found virtually worldwide, but are less common in the tropics than in cooler waters. The Minke often enters estuaries, bays and inlets and during summer may feed around headlands and small islands. Most, seasonally migrating from polar feeding grounds to warm temperate to tropical breeding grounds although there appears to be some groups resident year-round. There are three geographically isolated populations recognized, in the North Pacific, in the North Atlantic and in the Southern Hemisphere.

The Minke is the smallest of the seven great whales. It's size made it uneconomical to harvest commercially while the larger whales were in abundance. The species became protected with the declaration of the Moratorium on whaling by the International Whaling Commission in 1986. Norway and Japan are two countries that argue since the Minke is abundant it is not endangered and therefore they are harvesting (killing), albeit in small numbers, this species on a regular basis. Although it's numbers are not endangered it is on the endangered list as a threatened species, and is protected (since 1986) worldwide by international law.

Length: 8-10 metres (26-33 feet) Life-span about 50 years.

Minke Whale



Dive Sequence of the Minke



The (Orca) Killer Whale  
(*Orcinus orca*)

The Killer whale is the largest member of the dolphin family. This distinctive jet-black, brilliant white and grey marked, huge dorsal finned male, makes this animal relatively easy to identify. The Orca can grow to a length of 7m (23ft) and weigh 4-5,000 kg in the male and 6.6m (21ft) 2.5-3,000 kg in the female.

Despite its name, the Killer whale has never hurt a person in the wild. It is inquisitive and approachable and aggression within a pod is rare. The pod is a close-knit family group and is stable from one generation to the next. Its members usually stay together for life. When two or more pods come together temporarily the group is called a "superpod" and may number more than 150 whales. Usually larger groups split up into two or more smaller ones as the population grows. These groups of closely related pods (clans) often develop their own dialects.

More Killer whales live in cooler waters, especially polar regions, than tropical and subtropical regions. They are found in all seas including the Western Mediterranean, Arabian Sea and the Gulf of Aden. The largest population seems to be in Antarctica where it is estimated some 160,000 animals range.

Regarded as too small by the commercial whalers the Killer whale population has not been depleted. While early whaling practices have accounted for Killer whale deaths and indeed many other small cetaceans, it is defined as 'subsistence' or 'aboriginal' whaling and refers to the catching of whales from small boats (or from the beach) to satisfy material and cultural needs in local communities. The Indians of Vancouver and Washington on the Pacific coast of North America hunted the Gray whale and the Killer whale in this manner and for these reasons.

Between 1936 and 1967 the Norwegians took 1,400 Killer whales in the Northeast Atlantic. During its 1979-80 Southern Hemisphere whaling season the Soviet fleet targeted the Killer whale, with 916 killed, along with many larger species. A perceived conflict between man and whale in pursuit of a common source of food has led to many Killer whale deaths in the Icelandic and Norwegian herring fisheries.



Video: Greenpeace

30 minutes

