

BRITISH COLUMBIA

VANCOUVER ISLAND GEOLOGY

The Creation of the Johnstone Strait

Over a span of thousands of years and a combination of processes such as tectonics, volcanism, erosion and glaciation the 110km Johnstone Strait off of Vancouver Island was formed. Formally known as Wrangellia, a land mass that collided with North America causing it to fold and buckle forming the many of the mountains and ranges we associate with British Columbia today.

The formation of the narrow channels that make up Northeastern Vancouver Island dates back to the ice ages when glacial ice sheets settled in the area. During the Pleistocene Epoch Ice Age ice sheets carved their way through the igneous rock or the channel creating what is now known as Johnstone Strait, Queen Charlotte strait, and the Discovery Passage.

Glacial carving transpires through the slow movement of the ice sheet. Due to their sheer size and weight combined with gravity ice sheets move slowly down mountain valleys, and across plains. As glaciers move they sculpt the land via erosion and deposition. While they gradually move across the landscape the ice erodes the surface beneath it, creating fjords, glacial valleys, and horns. During this erosion the ice actually picks up and retains sediment and particles depositing them along the way. This process of deposition, depositing of material as the glacier retreats and melts away, forms moraines which are narrow ridges that show where the ice used to be.

Robson Bight Ecological Reserve

Ecological Reserves were formed in Canada in 1971 as a way to encourage the preservation of natural ecosystems, plant and animal species, and ecological phenomena.

Located 20kms south of Telegraph Cove on Vancouver Island, British Columbia the Robson Bight Ecological Reserve was established in June of 1982. Reserved to protect key habitats for killer whales, prevent harassment of the resident whale population, and protect the estuary and forested shoreline within the reserve the geography of Robson Bight makes an ideal sanctuary for the 13 pods of Northern Resident Orcas the present in the area, as well as a main migratory funnel for salmon, waterfowl, and other whales. With shorelines made of rock and cobble the beach rapidly drops off into the glaciated Johnstone Strait to a depth of 400 meters. This rocky shelf created due to the rapid drop off of shoreline is a geological feature that has led to the discovery of the phenomena where Orcas rub their bellies along the rocky shelf. The rubbing of their bellies along the shelves has been antiquated with Orcas preventing barnacles from growing on their skin. Orcas travel extremely quickly through deep channels and the addition of barnacles to their skin would slow them down.

Robson Bight is not only a preserve for mammalian and marine life but also home to six archaeological sites. Five out of the six sites are First Nations sites and are preserved to demonstrate the ties the First Nations' people had on the land. The sixth site is home to a historic telegraph line as remnants of a European Settlement.

Broughton Archipelago Marine Provincial Park

A string of remote solitary islands Broughton Archipelago is home to orcas, harbor seals, harbor porpoises, sea lion, sea otters, and a variety of other mammalian life. The Broughton Archipelago was established as a park in 1992 via British Columbia's protected area strategy. Containing one of British Columbia's least represented marine environments, Outer Fiordland Eco section Coastal Western Hemlock very wet maritime sub montane variant, and Broughton Archipelago is highly valued as a protected area.

Black bears stroll along the shoreline looking for salmon while bald eagles soar across the sky. Located off the southern extremity of Queen Charlotte Strait the sheltered waters created a rich life for not only the mammalian and marine life but for the First Nations people as well. Building clam terraces and villages the First Nations people made Broughton Archipelago home until the late 19th and early 20th century when European settlers first began to arrive.

Despite the still present European civilization First Nations' heritage still rings true in the Broughton Archipelago. Petroglyphs can be seen carved into the rocks on Berry Island and folklore dictates that First Nations people used to heat up water and use the rock formation known as the Chief's Bath tub for

ceremonial purposes. Ubiquitous to the area are manmade geological features known as clam beds. For the First Nations' people clams were a staple not only for their food source but for their economy as well for they used them in trade with other tribes. Clam beds were formed as the people would harvest the clams. During harvest of the clams the people would remove the large rocks and set them aside in the shape of a low laying wall, this process would eventually result in a flat cleared beach that is perfect for growing clams.

God's Pocket Marine Provincial Park

Located on the Northside of Goletas Channel God's Pocket Marine Provincial Park sits at the entrance of Queen Charlotte Strait. The marine park consists of a group of islands, Hurst, Bell, Boyle, and Crane, with God's Pocket Resort residing on Hurst Island.

God's Pocket Marine Park was first inhabited by Kwak'wala First Nations tribe. Known as the "Fort Rupert Indians" by European Settlers the Kwak'wala tribe is one of the few bilineal cultures where heritage rights are equally important from both male and female side. Primarily the Kwak'wala tribe based their economy on fishing, hunting, and gathering. Unfortunately, upon contact with the first European settlers in the late 1700s disease soon ran rampant throughout the tribe reducing their population by 75%. The Kwak'wala tribe has undertaken much in order to restore their customs and traditions.

A rich First Nations culture is not all that God's Pocket Marine Park boasts as Jacques Cousteau rated



the area as one of the best cold water dive sites in the world. Designed with a focus on habitat protection for wildlife the area is home to a vast array of marine and mammalian life. Orcas, Pacific Whiteside Dolphins, Harbour seals, and Humpback whales are a common sight within the park. As a safe haven for multitudes of sea birds and Bald Eagles the area is rich in avian diversity as well.

ECOLOGY OF NORTH EASTERN BRITISH COLUMBIA

Vancouver Island Ranges run the length of Vancouver Island with an area of 31,788 km² dividing the island into two different climate systems. With the Japan Current hitting the western coastal side of the island most of the west coast of Vancouver Island is exposed to an oceanic climate comprised of rainy but mild seasons. Due to the rain shadow caused by the Vancouver Island Range the eastern side of the island boasts more of a cool Mediterranean climate with mild winters and dry summers that results in a long growing season. Despite the difference in climate due to the rain shadow both aspects of Vancouver Island experience similar weather patterns. Most of the rainfall occurs during the winter months and limited precipitation is combined with higher temperatures in the summer.

Previous to the ice ages, British Columbia had a more diverse flora and extensive coniferous forests. After retraction of the glaciers from the area, wind borne seeds repopulated the flora and forests leading to a more predominant lodge pole pine species with an open landscape. Around 10,000 years ago, during the Holocene, the climate became warmer and drier resulting in larger open meadows and decrease in forests. Fires began to spread rampant destroying the new born lodge pole pines and leading the way for Douglas-fir forests, with the southern region being home to some of the tallest Douglas Firs recorded. Since then the climate has continued to cool and precipitation increase causing



the fire danger to diminish and allow for species such as western red cedar and western hemlock to populate.

While predominantly consisting of Douglas-fir Vancouver Island, especially the central and northern regions, still hosts a variety of tree species such as Western Red Cedar, Red Alder, Western Hemlock, Grand Fir, and Big Leaf Maple. Consequence of the rain shadow you will find a slightly different combination of tree species on the drier eastern side of the island such as Gary Oak.

In this coniferous forest landscape the rest of the terrestrial environment of the island tends to be somewhat small. Fungi and lichen thrive and prove to be some of the most important organisms of the area. With a vast array of species fungi helps to provide an extra boost of nutrients in exchange for sugars being transported to and from the greenery above by attaching the root system of the forests. A Fungi relative, lichen, also enjoys a symbiotic relationship with the coniferous forests of Vancouver Island by providing nitrates to the nutrient poor ecosystem in exchange for sugar. As rainfall is considerably less on the eastern side of the island that particular ecosystem has become one of the most endangered in British Columbia as it is often subject to drought and decay. This makes the cohabitation of fungi, algae, and lichen with small vertebrates such as tiny salamanders and Northern Flying squirrels all that more important as they help to spread the spores of the ground cover around providing an increase in nutrition intake for the forest.

A wonderful array of flora also contributes to the beauty the makes up the Vancouver Island's ecosystem. Wild blueberries are found in abundance and are of great importance not only to the bear population, who love to snack on them when in season, but also to the First Nations people. Holding the wild blueberry in high esteem the First Nations people believed that the "Great Spirit" sent these berries down to relieve the hunger of the children during a famine. They were used for medicinal purposes, such as to make a tea that would help with birthing pain, coughs, and to help purify the blood.

While much of British Columbia's native grasslands have been transformed into agriculture three sections of the ecosystem have maintained their integrity. Bluebunch wheatgrass and big sagebrush can be found in the lower grasslands with an addition of Sandbergs wheatgrass to the middle lands and fescues being the predominant species of the upper grasslands. Intertwined with all these are a variety of attractive wildflowers such as; White fawn lily, bleeding heart, trillium, spring gold, western buttercup, Hooker's and nodding onions, stonecrops, and seablush. Pacific Bleeding Heart is one of Vancouver Island's most delicate flowers, getting its name from its heart shaped flowers. The bleeding heart plays a symbiotic role with ants that reside in the coniferous forests. Sprouting little white seeds with appendages on them the ants are attracted to them and the oil from the plant provides necessary nutrients.

Mammalian life exhibits minimal species diversity on Vancouver Island compared to the mainland or even that of the Pacific Northwest. In fact some mammals that may seem native to the ecosystem

supported by Vancouver Island and British Columbia are not even found on the island such as; grizzly bears, mountain goats, porcupines, moose, and skunks. Most of the large mammals found are limited to black-tailed deer, black bears, and cougars. Despite the lack of mammalian diversity Vancouver Island is home to three specific species that are only found on the Island; the Vancouver Island Black Bear, Vancouver Island Wolf, and Vancouver Island Marmot.

One of the most common mammals on Vancouver Island the Vancouver Black Bear is a little bit larger, females reaching around 180kg and males 235kg, and slightly more black than the ones seen on the mainland. They can be found mostly in the lower regions of the island as they require food that is most easily accessible such as salmon, berries, roots, and succulents. The Vancouver Island Wolf is a subspecies of mainland wolves and mostly found on the northern point of the island. Very shy and elusive they travel in packs of 5 to 20 staying mostly away from human contact. Despite being a top predator on the island their population is in great danger due to human interaction and habitat destruction. The most famous of the Vancouver Island mammals the Vancouver Island Marmot is also the most endangered. As the largest member of the squirrel family they can be found mostly in the sub-alpine meadows where they feast on grasses, sedges, and herbs. Habitat loss continues to be the biggest concern for this species and they are currently at a grave risk of extinction.

The nutrient rich waters of the Pacific Ocean and Johnstone Strait provide an excellent habitat for marine life. Strong current moves through the Johnstone Strait from the Pacific Ocean providing the perfect conditions for constant mixing of oxygen and salinity allowing for a very rich bottom fauna. Growing only in the cold waters of the northeastern Pacific Ocean these conditions are perfect for marine fauna such as bullwhip kelp and bladderwrack kelp. Bullwhip kelp, scientifically known as *Nereocystis luetkeana*, is found in fast currents such as with the Johnstone Strait. Bullwhip kelp has a very long body often growing up from rocky water bottoms up to 30m long and 30 cm wide. A bulb filled with carbon monoxide floats on top of the water with thick tender leaves, fronds, growing out of it. The fronds of bull kelp can get up to 18m in length. The appearance of bull kelp is directly affected by water temperature and weather as they grow best during the warm summer months by soaking up sunlight via the fronds.

Bladderwrack is another species of kelp that is commonly found on the shorelines of Vancouver Island. Residing mostly on the rocky shorelines Bladderwrack reaches a length of 40cm in length and contains many branches with small little bulbs on the ends. The bulbs act as little buoys when the tides come up keeping the kelp on top of the water and absorbing sunlight. Bladderwrack can almost be considered a complete food as it provides a good source of protein, fatty acids, and minerals.

Kelp forests are important aspects to coastal marine life as they are rich in marine animal species. Sea otters are most commonly found living and feeding symbiotically within the kelp forests. One of the most dangerous predators of the kelp forests are urchins. Urchins graze on the kelp and produce red algae that are detrimental to kelp growth. It has been seen that when overtaken by urchins' sea kelp

forests will reduce and often disappear until that population has diminished. Sea otters are a key player in controlling the urchin population as it is one of their greatest food sources.

Many other marine species can be found not only in the nutrient rich kelp forests but along the rocky shorelines of Vancouver Island as well. Walking along the tidal pools you will see a vast array of sea stars, mollusks, sea cucumbers, crabs and other crustaceans.



VANCOUVER ISLAND BIRDING LIST

American Kestrel

Black-Capped Chickadee

Burrowing Owl

Common Merganser

Golden Eagle

Great Horned Owl

Kingfisher

Mallard

Northern Harrier

Osprey

Red-Tailed Hawk

Red-Necked Pheasant

Rufous Hummingbird

Snowy Owl

Turkey Vulture

White Pelican

Bald Eagle

Brant Goose

Canada Goose

Downy Woodpecker

Great Blue Heron

Grey Jay

Loon

Northern Goshawk

Northern Pintail

Peregrine Falcon

Red-Winged Blackbird

Ruffed Grouse

Snow Goose

Trumpeter Swan

Western Screech-Owl

Wood Duck





Orca (Killer Whale) Facts

CLASS: Mammalia
ORDER: Cetacea
SUBORDER: Odontoceti
FAMILY: Delphinidae
GENUS: Orcinus
SPECIES: orca



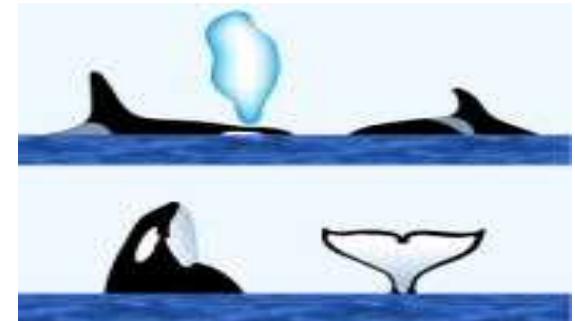
The orca, or killer whale, with its striking black and white coloration is one of all the cetaceans. It has been extensively studied in the wild and is often the main attraction at many sea parks and aquaria. An odontocete, or toothed whale, the orca is known for being a carnivorous, fast and skillful hunter, with a complex social structure and a cosmopolitan distribution (orcas are found in all the oceans of the world). Sometimes called "the wolf of the sea", the orca can be a fierce hunter with well-organized hunting techniques, although there are no documented cases of killer whales attacking a human in the wild.

PHYSICAL DESCRIPTION

The orca has a striking color pattern made up of well-defined areas of shiny black and cream or white. The dorsal (top) part of its body is black, with a pale white to gray "saddle" behind the dorsal fin. It has an oval, white eyepatch behind and above each eye. The chin, throat, central length of the ventral (underside) area, and undersides of the tail flukes are white. Each whale can be individually identified by its markings and by the shape of its saddle patch and dorsal fin.

COLOR

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Surface Characteristics

FINS AND FLUKE

Another distinctive feature of the orca is its dorsal fin, which can reach 6 feet (1.8 m) high in males and is shaped like an isosceles triangle. The immature male and the female dorsal fins are also large, reaching 3 feet (.91 m) high, but are falcate (curved). The dorsal fin often has identifying nicks, cuts, scars and indentations. The paddle-shaped pectoral flippers are broad, rounded, and can reach a length of nearly 6 feet (1.8 m) and a width of 3 feet (.91 m).

LENGTH AND WEIGHT

Males can grow as large as 32 feet (9.6 m) long and weigh 8 to 9 tons. Females can reach 23 feet (8.2 m) in length and weigh up to 4 tons.

FEEDING

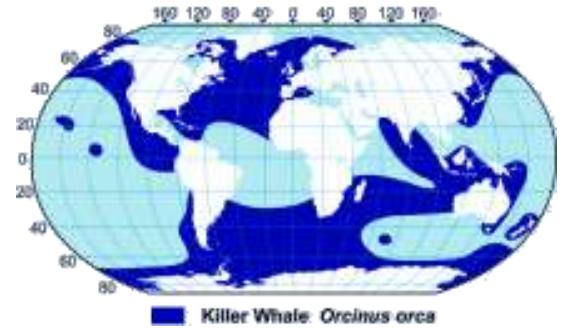
The mouth of the orca is large and well adapted for hunting. It has 46 to 50 conical shaped teeth that point slightly backwards and inwards. The upper and lower teeth interlock, which aids in gripping large prey and tearing it into smaller pieces for easier swallowing. Depending on the population and geographic area, the diet of orcas varies. Food preference and availability may have led to the distinct population types, such as resident, transients, and offshores that have been observed/identified in the Pacific Northwest region of the United States and other areas around the world. Generally speaking, transients will feed on a variety of animals including: sea lions, elephant seals, harbor seals, porpoises, squid, sharks, fish, penguins, smaller whales, such as belugas and narwhals and even large baleen whales, such as gray whales. Resident whales tend to feed primarily on fish species such as salmon or herring. The diet of offshores is still being studied by scientists.

MATING AND BREEDING

Little is known about the orca's breeding habits. Newborn calves have been observed throughout the year suggesting that that mating can occur at any time with no particular breeding season. In the wild, orcas become sexually mature between the ages of 10 and 18 years of age and are thought to be actively reproducing by the time the male reaches about 20 feet (5.1 m) in length and the female reaches about 16 feet (4.1 m). Based on long-term field studies, females are believed to be reproductively active into their early 40's. The maximum age for males is unknown. Captive females can bear a calf every two years, but a more typical period between calves in the wild is 3 to 5 years. The gestation period is estimated to be between 13 to 17 months. At birth, a calf is generally about 6-7 feet long (1.8-2.1 m) and weighs around 400 pounds. However, calf size and weight does vary slightly between populations/regions.

DISTRIBUTION AND MIGRATION

The orca is found in all the oceans of the world, though they are more abundant in cooler waters. Unlike some other species of whales, which follow a regular migration route each year, the orca seems to travel according to the availability of food. They are one of the few species of whales that move freely from hemisphere to hemisphere.



Range Map

NATURAL HISTORY

Orcas generally live in pods (groups) consisting of several females, calves, one or more males, and/or juveniles. Some pods consist of a mother and her offspring who stay with her for life. This type of matrilineal family structure has been observed in the U.S. Pacific Northwest where resident pods have been documented as stable, consistent matriarchal family groups with several generations traveling together. Transient pods appear to be more fluid; individuals come and go, groups often contain unrelated females with offspring, offspring do not stay with their mother and pods may form solely as a temporary foraging pack. The social structure of other populations, including offshore orcas, is being studied to document whether certain family groups always stay together or return to each other after periods of time. Mothers are very protective of their calves, and orcas are known to protect and care for sick and injured companions. Sparked by the increase in live capture for aquaria and public concern, scientists have been studying resident pods along the northern Pacific coast of the United States and Canada since 1970. By 1973, photographs were being used to identify individuals based on differences in saddle color pattern, dorsal fin shapes and other identifying marks and scars. Identified orcas have all been numbered and careful records are kept of their re-sightings. Recordings of the sounds made by these orcas have revealed that each pod has its own "dialect." Each pod has some sounds in common with other pods, and other sounds that are unique to its own pod. Through these scientific studies, much has been learned about population, travel patterns, reproduction, behavior and social habits of orcas.

STATUS

Although orcas are widely distributed, total world population is still unknown. They have no natural enemies and have not been hunted as much as other whales. Recent studies suggest that a significant threat to orcas, and other marine mammals, may come from man-made chemicals. Yet, toxins are not the only threats facing orcas. Many fish populations around the world are decreasing. This may be having a direct effect on the populations of fish-eating resident whales. Loss of fish may also cause a decline in seals and sea lions, often the primary prey of transient orcas.

Facts reprinted with permission from the American Cetacean Society.

Minke Whale Facts

CLASS: Mammalia
ORDER: Cetacea
SUBORDER: Mysticeti
FAMILY: Balaenopteridae
GENUS: Balaenoptera
SPECIES: acutorostrata



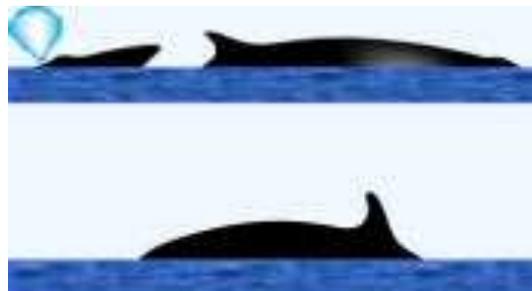
The minke (pronounced mink-ey) whale is also known as the Little Piked Whale. Like all the rorquals, the minke is a fast swimmer, capable of reaching speeds of 16-21 knots (18-24 mph). The minke can be curious, and has been known to approach ships, even at times keeping up with moving vessels. Often, however, minkes spend relatively little time at the surface. It may be hard to see a minke at sea because its blow is rarely visible and it tends to disappear quickly after exhaling. Since it is relatively small, it may be hidden in a choppy sea. Minke distribution is widespread, ranging from sub-tropical to polar waters. In their feeding grounds in the Antarctic, minkes will actually inhabit the pack ice!

PHYSICAL DESCRIPTION

The minke whales is the smallest member of the rorqual family of whales (those whales with baleen, a dorsal fin, and throat pleats). One of its most distinctive features is the narrow, triangular rostrum (upper jaw), which is proportionally shorter than in other rorquals. A single ridge extends from the tip of the rostrum to the blowhole. The minke is a baleen whale, having 280 to 300 yellowish-white baleen plates, usually no more than 11 inches in length, on each side of its upper jaw. Its body is slender and streamlined. Like all rorquals, the minke has a series of 50 to 70 ventral grooves, or pleats, that expand during feeding.

COLOR

The minke is counter-shaded-black to dark gray on top, white below. Some minkes have a light-colored chevron on the back behind the head. Two areas of lighter gray appear on each side: one behind the flippers and another below and forward of the dorsal fin. Distinctive to minke whales outside of the Antarctic is a white band on each flipper. The band is usually absent in Antarctic minkes, although some show an irregular banding pattern.



Surface Characteristics



FINS AND FLUKE

The dorsal fin of the minke is tall and falcate (curved), and is located two-thirds of the way back on the body. Its flippers are slender and pointed at the tips. Flukes are broad, up to one-fourth of the body length, pointed at the tips, and notched in the center.

LENGTH AND WEIGHT

Adult males average about 8 m (26 feet) with a maximum length of 9.4 m (31 feet), while adult females average 8.2 m (27 feet) with a maximum length of 10.2 m (33 feet). Both males and females weigh about 10 tons. Both sexes are slightly larger in the southern hemisphere.

FEEDING

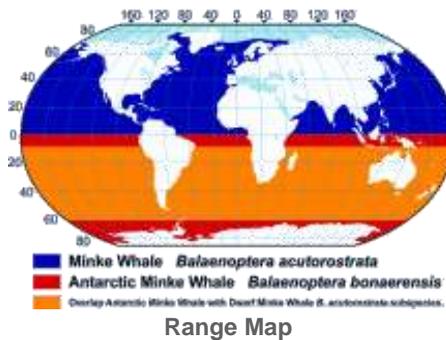
Minke whales feed primarily on krill in the southern hemisphere and on small schooling fish (capelin, cod, herring, pollock) or krill in the northern hemisphere. They will also eat copepods in certain areas.

MATING AND BREEDING

Sexual maturity is reached at 7 or 8 years in the northern hemisphere. Breeding peaks in summer months. The gestation period is 10 to 11 months, and calving is thought to occur once every two years on average. Calves are 3 m (10 feet) at birth and weigh 450 kg (1000pounds). Minke calves nurse for approximately 6 months.

DISTRIBUTION AND MIGRATION

Minkes are found in all oceans, though they are rarely observed in the tropics. They seem to prefer icy waters, and are found right up to the edge of the icepack in polar regions, and have actually become entrapped in the ice fields on occasion.



NATURAL HISTORY

Minkes tend to be solitary animals, though sometimes they are seen traveling in pairs or in small groups of 4 to 6. In the polar regions, where food is concentrated, it is common to find larger aggregations of feeding animals in an area. They appear to segregate by age and sex more than do the other baleen whales. Females remain close to shore, while males are farther out to sea. Some minkes migrate long distances, but others may move only within a restricted area. In some regions, minkes may be found year-round. Their life span is believed to be about 50 years. Killer whales are known to prey on minkes, especially in parts of the southern hemisphere. The taxonomy of minke whales is currently in question, and soon there may be three

species of minke whales: the Antarctic minke whale (relatively large and lacking a flipper stripe), the dwarf minke (smaller than Antarctic, has a flipper stripe, lives in tropical southern hemisphere waters), and the true minke whale (flipper stripe present, lives in the northern hemisphere).

STATUS

Only in recent decades have minke whales been taken by whalers to any extent; they were thought to be too small to be a worthwhile catch. But as the larger whale species became depleted, the whalers began to hunt the minke as a replacement. Since the late 1960s and 1970s, Japan, Russia (which has now ceased whaling), and (to some extent) Norway have focused their whaling efforts on minke whales. Scientists are still examining the populations of minke whales in areas where they are harvested, and have discovered that the largest numbers of minkes are found in the southern hemisphere. It is thought that minke populations have increased as they started to eat the food that was previously eaten by the now-depleted large whale species. The present population worldwide is believed to be over a millions animals.

Facts reprinted with permission from the American Cetacean Society.



Humpback Whale Facts

CLASS: Mammalia
ORDER: Cetacea
SUBORDER: Mysticeti
FAMILY: Balaenopteridae
GENUS: Megaptera
SPECIES: novaeangliae



The humpback whale is one of the rorquals, a family that also includes the blue whale, fin whale, Bryde's whale, sei whale, and minke whale. Rorquals have two characteristics in common: dorsal fins on their backs, and ventral pleats running from the tip of the lower jaw back to the belly area. The shape and color pattern on the humpback whale's dorsal fin and flukes (tail) are as individual in each animal as are fingerprints in humans. The discovery of this interesting fact changed the course of cetacean research forever, and the new form of research known as "photo-identification," in which individuals are identified, catalogued, and monitored, has led to valuable information about such things as humpback whale population sizes, migration, sexual maturity, and behavior patterns.

PHYSICAL DESCRIPTION

The head of a humpback whale is broad and rounded when viewed from above, but slim in profile. The body is not as streamlined as other rorquals, but is quite round, narrowing to a slender peduncle (tail stock). The top of the head and lower jaw have rounded, bump-like knobs, each containing at least one stiff hair. The purpose of these hairs is not known, though they may allow the whale to detect movement in nearby waters. There are between 20-50 ventral grooves which extend slightly beyond the navel

COLOR

The body is black on the dorsal (upper) side, and mottled black and white on the ventral (under) side. This color pattern extends to the flukes. When the humpback whale "sounds" (goes into a long or deep dive) it usually throws its flukes upward, exposing the black and white patterned underside. This pattern is distinctive to each whale. The flippers range from all white to all black dorsally, but are usually white ventrally.



Surface Characteristics

FINS AND FLUKE

About 2/3 of the way back on the body is an irregularly shaped dorsal (top) fin. Its flippers are very long, between 1/4 and 1/3 the length of its body, and have large knobs on the leading edge. The flukes (tail), which can be 18 feet (5.5 m) wide, is serrated and pointed at the tips.

LENGTH AND WEIGHT

Adult males measure 40-48 feet (12.2-14.6 m), adult females measure 45-50 feet (13.7-15.2 m). They weigh 25 to 40 tons (22,680-36,287 kg).

FEEDING

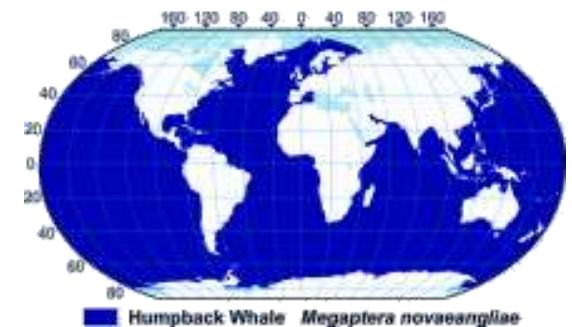
Humpback whales feed on krill, small shrimp-like crustaceans, and various kinds of small fish. Each whale eats up to 1 and 1/2 tons (1,361 kg) of food a day. As a baleen whale, it has a series of 270-400 fringed overlapping plates hanging from each side of the upper jaw, where teeth might otherwise be located. These plates consist of a fingernail-like material called keratin that frays out into fine hairs on the ends inside the mouth near the tongue. The plates are black and measure about 30 inches (76 cm) in length. During feeding, large volumes of water and food can be taken into the mouth because the pleated grooves in the throat expand. As the mouth closes water is expelled through the baleen plates, which trap the food on the inside near the tongue to be swallowed.

MATING AND BREEDING

Little is known about the orca's breeding habits. Newborn calves have been observed throughout the year suggesting that that mating can occur at any time with no particular breeding season. In the wild, orcas become sexually mature between the ages of 10 and 18 years of age and are thought to be actively reproducing by the time the male reaches about 20 feet (5.1 m) in length and the female reaches about 16 feet (4.1 m). Based on long-term field studies, females are believed to be reproductively active into their early 40's. The maximum age for males is unknown. Captive females can bear a calf every two years, but a more typical period between calves in the wild is 3 to 5 years. The gestation period is estimated to be between 13 to 17 months. At birth, a calf is generally about 6-7 feet long (1.8-2.1 m) and weighs around 400 pounds. However, calf size and weight does vary slightly between populations/regions.

DISTRIBUTION AND MIGRATION

Found in all the world's oceans, most populations of humpback whales follow a regular migration route, summering in temperate and polar waters for feeding, and wintering in tropical waters for mating and calving. In the Arabian Sea, a year-round non-migratory population of humpbacks appears not to follow this general rule.



Range Map

NATURAL HISTORY

At least 3 different species of barnacles are commonly found on both the flippers and the body of the humpback whale. It is also home for a species of whale lice, *Cyamus boopis*. Humpback whales are active, acrobatic whales. They can throw themselves completely out of the water (breaching), and swim on their backs with both flippers in the air. They also engage in "tail lobbing" (raising their huge flukes out of the water and then slapping it on the surface) and "flipper slapping" (using their flippers to slap the water). It is possible that these behaviors are important in communication between humpbacks. Perhaps the most interesting behavior of humpback whales is their "singing." Scientists have discovered that humpback whales sing long, complex "songs". Whales in the North American Atlantic population sing the same song, and all the whales in the North American Pacific population sing the same song. However, the songs of each of these populations and of those in other areas of the world are uniquely different. A typical song lasts from 10-20 minutes, is repeated continuously for hours at a time, and changes gradually from year to year. Singing whales are males, and the songs may be a part of mating behavior.

STATUS

Because their feeding, mating, and calving grounds are close to shore and because they are slow swimmers, the humpback whales were an easy target for early whalers. The International Whaling Commission (IWC) gave them worldwide protection status in 1966, but there were large illegal kills by the Soviets until the 1970's. It is believed they number about 30,000-40,000 at present, or about 30-35% of the original population.

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Dall's Porpoise Facts

CLASS: Mammalia
ORDER: Cetacea
SUBORDER: Odontoceti
FAMILY: Phocoenidae
GENUS: Phocoenoides
SPECIES: dalli



This uniquely marked, black and white porpoise was named after the American naturalist W. H. Dall, who collected the first specimen of the type, which is now on display in the U. S. National Museum. It may be the fastest swimmer of all the small cetaceans and has been reported to reach speeds of 30 knots. It delights in bow riding with fast-moving vessels. As the porpoise dashes in at high speed, its head and back produce a bow wave called a "rooster tail", which creates a hollow cone allowing the animal to breathe while still under the surface of the water.

PHYSICAL DESCRIPTION

Dall's porpoise has an extremely robust and muscular body, especially through the mid-section, and the male is considerably thicker than the female. Its head is very small and rounded, appearing smaller than it really is because of the powerfully built body. The head slopes steeply to a short poorly defined beak. Its mouth is small and narrow, with 19 to 23 very small spade-shaped teeth in each side of the upper jaw and about 20 to 24 teeth in each side of the lower jaw. The teeth of Dall's porpoise are most unusual. Each tooth is separated by rigid, protruding growths called "gum teeth." Since its teeth are so small, these horny growths might be of help in grasping slippery food such as squid. The lower jaw extends slightly beyond the upper. In addition to a dorsal (upper) hump, there is a large hump located slightly forward of the flukes on the ventral (under) part of the body, which makes the animal look somewhat malformed. This ventral hump is more pronounced in adult males. There are few accounts of eye color in cetaceans, but Dall's porpoise is an exception; its eye has been described as having a black or dark blue iris and a deep, iridescent blue-green pupil.

COLOR

Dall's porpoise is black with white markings. Though the color pattern varies with individual animals, most are basically black on the upper portions of the body, with large, oval-shaped white sides and white bellies. A band of white borders the flukes and the dorsal fin is usually patterned in white in varying shapes--but it may also be all black or all white.



Surface Characteristics

FINS AND FLUKE

Its dorsal fin is placed slightly forward of the center of the body and is triangular in shape, and the flippers are very small and rounded at the tips. Flukes are small and pointed at the tips with a slight center notch.

LENGTH AND WEIGHT

This cetacean is quite small, averaging 6 feet (1.8 m) for males with a maximum length of 7.5 feet (2.29m). Females average 6 feet (1.8 m) with a maximum length of 7 feet (2.1m). Weight averages 270 pounds (123 kg) for both males and females. Possible maximum weight is about 350 pounds (160 kg).

FEEDING

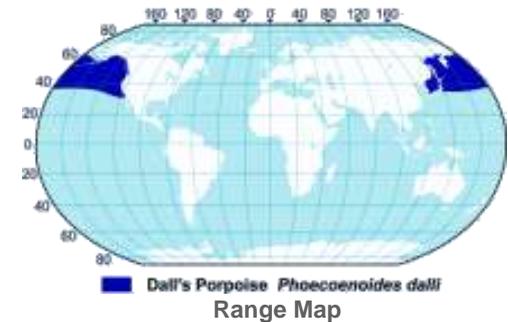
Dall's porpoise eats a wide variety of prey species, depending on what's available within its range. In some areas it eats squid, but in other areas it may feed on small schooling fishes such as capelin, sardines, and herring. It is known to feed on certain deep-water species such as hake and deep-sea smelt, and in the northwest Pacific, lantern fish seem to be its primary food. It usually consumes about 28 to 30 pounds of food each day (12.7-13.6 kg), and does most of its feeding at night.

MATING AND BREEDING

Sexual maturity is generally reached at 6.5 feet (1.9 m) or at 8 years of age for males and about 5.5 feet (1.7 m) or 7 years for females. Calves average about 3.5 feet (1m) at birth and weigh about 55 pounds (25 kg). Calves may nurse for 2 years and the calving interval is probably about 3 years. Calving takes place primarily in summer, although births in U.S. Coastal populations can occur year-round. Gestation is between 10 to 12 months. Life expectancy is estimated to be less than 20 years.

DISTRIBUTION AND MIGRATION

Dall's porpoise are found only in the North Pacific, ranging from Baja California north to Alaska and the Bering Sea and across into Japanese waters, seemingly confined to colder waters with temperatures of less than 60 degrees F (15 C). Many are year-round residents over much of their range.



NATURAL HISTORY

These animals usually travel in small groups of 10 to 20, but as many as 200 may congregate while engaged in feeding. They are often found in the company of Pacific white-sided dolphins or pilot whales. Although known to bow ride, this small, fast species can often be elusive.

STATUS

Dall's porpoises are still numerous, but in urgent need of protection due to the large numbers caught in Japanese gillnet fisheries and by Japanese coastal whaling operations. Thousands are taken for food each year by the Japanese in their coastal waters, where 39,000, or about 1/3 of the western North Pacific population, were hand-harpooned in 1988. A serious threat also exists from the Japanese high seas salmon fishery, where a reported incidental take of 8,000 to 10,000 die during the 2-month fishing season. There may be an equal number of unreported catches. No one knows why Dall's porpoises become entangled in nets, since they do not feed on salmon. It is known, however, that some of the deep-sea species they do feed on come to the surface at night--which could put porpoises and prey on a collision course with the 1,700 miles of nets that Japanese fishermen set each night. It has also been suggested that their sonar capabilities do not detect the type of netting used (2" mesh monofilament, plastic and nylon). Others feel they may simply blunder into the nets (over 84,000 miles of nets are set during the fishing season). The majority of those caught in the nets are females and most are pregnant or nursing mothers. In addition, the squid fishery, which lasts 5 months out of each year, is an unknown factor in non-target species deaths. Efforts are now being made to regulate the annual losses of Dall's porpoise, but it is a very difficult task to assess population size, movements, numbers lost in nets, and the impact that these losses have on the total population in a wide expanse of ocean.

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Pacific White-Sided Dolphin Facts

CLASS: Mammalia
ORDER: Cetacea
SUBORDER: Odontoceti
FAMILY: Delphinidae
GENUS: Lagenorhynchus
SPECIES: obliquidens



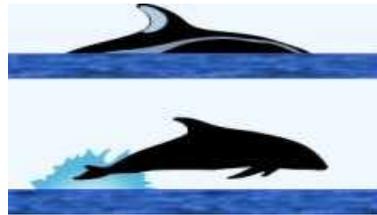
White-sided dolphins come in two forms: the Atlantic white-sided and the Pacific white-sided. Somewhat similar in appearance, the Atlantic species is larger and more robust than its Pacific counterpart. Both species are avid bow-riders and acrobatic jumpers. C.M. Scammon reported in 1874, "They are seen in numbers varying from a dozen to many hundreds, tumbling over the surface of the sea, or making arching leaps, plunging again on the same curve, or darting high and falling diagonally sideways upon the water... accompanied by a report that may be heard at some distance."

PHYSICAL DESCRIPTION

Often referred to as "lag" because of its cumbersome scientific name. Lagenorhynchus, the Pacific white-sided dolphin has a short, rounded, thick beak containing 23 to 32 small, rounded slightly curved teeth in each side of the upper and lower jaws. This dolphin is energetic and quite active and is frequently seen leaping, belly flopping, and somersaulting. It is a strong, fast swimmer and enthusiastic bow rider, often staying with moving vessels for extended periods.

COLOR

The Pacific white-sided dolphin is attractively marked. Its back is black and its sides are light gray with thin, white stripes that extend from above the eye along the sides, widening towards the tail; its belly is white. It has a black beak and lips and a black ring around each eye.



Surface Characteristics

FINS AND FLUKE

Its dorsal fin is tall and sharply hooked, and is located at the center of the back. The leading edge is black and the rear portion is light gray. Its flippers are small and curved and rounded at the tips. Its flukes are notched in the center.

LENGTH AND WEIGHT

These dolphins reach a length of 7 to 8 feet (2.1 to 2.4 m) and weigh 300 pounds (150 kg).

FEEDING

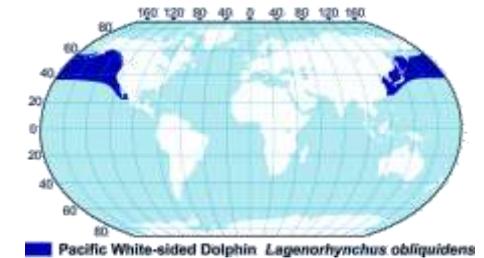
Lags eat squid and small schooling fish such as anchovies, herring, sardines, and hake. It is believed they feed largely at night.

MATING AND BREEDING

Sexual maturity for both sexes is reached when they are 6 feet in length (1.8 m), but this can vary according to geographical location. Length at birth is 31 to 37 inches (80 to 95 cm); gestation period is estimated to be 9 to 12 months.

DISTRIBUTION AND MIGRATION

The Pacific white-sided dolphin inhabits temperate, coastal waters in the North Pacific, avoiding both tropical or Arctic waters. Its range extends from Amchitka Island in the Aleutians, to the Gulf of Alaska south along the coast of North America to the tip of Baja California. It is also found off the coast of Asia from the Kuril Islands to Japan. It is abundant in Japanese waters with estimates of 30,000 to 50,000 in that area.



Range Map

NATURAL HISTORY

Pacific white-sided dolphins are often found in large herds of 90 to 100. The herds are made up of animals of both sexes and all ages. Since they share the same range, they are most commonly seen with northern right-whale dolphins and are often seen accompanying other dolphins and large whales. They are considered residents in some parts of their range, notably Monterey Bay and off southern California and northwestern Baja California. These resident populations are joined by transient groups from other areas from fall to spring.

STATUS

This species is no longer commercially hunted in the United States. Some are taken for food in Japan's coastal fishery. They are difficult to catch, however, and the numbers taken are not a threat to the total population in Japanese waters. A few have been captured for display in aquariums, and unknown numbers have been accidentally killed in drift and gill nets. Population figures are unknown.

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