

= Blue whale =

The blue whale (*Balaenoptera musculus*) is a marine mammal belonging to the baleen whales (Mysticeti). At up to 30 metres (98 ft) in length and with a maximum recorded weight of 173 tonnes (191 short tons) and probably reaching over 181 tonnes (200 short tons), it is the largest animal ever known to have existed.

Long and slender, the blue whale's body can be various shades of bluish-grey dorsally and somewhat lighter underneath. There are at least three distinct subspecies: *B. m. musculus* of the North Atlantic and North Pacific, *B. m. intermedia* of the Southern Ocean and *B. m. brevicauda* (also known as the pygmy blue whale) found in the Indian Ocean and South Pacific Ocean. *B. m. indica*, found in the Indian Ocean, may be another subspecies. As with other baleen whales, its diet consists almost exclusively of small crustaceans known as krill.

Blue whales were abundant in nearly all the oceans on Earth until the beginning of the twentieth century. For over a century, they were hunted almost to extinction by whalers until protected by the international community in 1966. A 2002 report estimated there were 5,000 to 12,000 blue whales worldwide, in at least five groups. The IUCN estimates that there are probably between 10,000 and 25,000 blue whales worldwide today. Before whaling, the largest population was in the Antarctic, numbering approximately 239,000 (range 202,000 to 311,000). There remain only much smaller (around 2,000) concentrations in each of the eastern North Pacific, Antarctic, and Indian Ocean groups. There are two more groups in the North Atlantic, and at least two in the Southern Hemisphere. As of 2014, the Eastern North Pacific blue whale population has rebounded to nearly its pre-hunting population.

= Taxonomy =

Blue whales are rorquals (family Balaenopteridae), a family that includes the humpback whale, the fin whale, Bryde's whale, the sei whale, and the minke whale. The family Balaenopteridae is believed to have diverged from the other families of the suborder Mysticeti as long ago as the middle Oligocene (28 Ma ago). It is not known when the members of those families diverged from each other.

The blue whale is usually classified as one of eight species in the genus *Balaenoptera*; one authority places it in a separate monotypic genus, *Sibbaldus*, but this is not accepted elsewhere. DNA sequencing analysis indicates that the blue whale is phylogenetically closer to the sei whale (*Balaenoptera borealis*) and Bryde's whale (*Balaenoptera brydei*) than to other *Balaenoptera* species, and closer to the humpback whale (*Megaptera*) and the gray whale (*Eschrichtius*) than to the minke whales (*Balaenoptera acutorostrata* and *Balaenoptera bonaerensis*). If further research confirms these relationships, it will be necessary to reclassify the rorquals.

There have been at least 11 documented cases of blue whale-fin whale hybrid adults in the wild. Arnason and Gullberg describe the genetic distance between a blue and a fin as about the same as that between a human and a gorilla. Researchers working off Fiji believe they photographed a hybrid humpback-blue whale including the discovery through DNA analysis from a meat sample found in a Japanese market.

The first published description of the blue whale comes from Robert Sibbald's *Phalainologia Nova* (1694). In September 1692, Sibbald found a blue whale that had stranded in the Firth of Forth? a male 24 m (78 ft) long? which had "black, horny plates" and "two large apertures approaching a pyramid in shape".

The specific name *musculus* is Latin and could mean "muscle", but it can also be interpreted as "little mouse". Carl Linnaeus, who named the species in his seminal *Systema Naturae* of 1758, would have known this and may have intended the ironic double meaning. Herman Melville called this species "sulphur-bottom" in his novel *Moby-Dick* due to an orange-brown or yellow tinge on the underparts from diatom films on the skin. Other common names for the blue whale have included "Sibbald's rorqual" (after Sibbald, who first described the species), the "great blue whale" and the "great northern rorqual". These names have now fallen into disuse.

The first known usage of the term "blue whale" was in Melville's *Moby Dick*, which only mentions it in passing and does not specifically attribute it to the species in question. The name was really derived from the Norwegian *blåhval*, coined by Svend Foyn shortly after he had perfected the harpoon gun; the Norwegian scientist G. O. Sars adopted it as the Norwegian common name in 1874.

Authorities classify the species into three or four subspecies: *B. m. musculus*, the northern blue whale consisting of the North Atlantic and North Pacific populations, *B. m. intermedia*, the southern blue whale of the Southern Ocean, *B. m. breviceuda*, the pygmy blue whale found in the Indian Ocean and South Pacific, and the more problematic *B. m. indica*, the great Indian rorqual, which is also found in the Indian Ocean and, although described earlier, may be the same subspecies as *B. m. breviceuda*.

== Description and behaviour ==

The blue whale has a long tapering body that appears stretched in comparison with the stockier build of other whales. The head is flat, U-shaped and has a prominent ridge running from the blowhole to the top of the upper lip. The front part of the mouth is thick with baleen plates; around 300 plates, each around one metre (3 ft) long, hang from the upper jaw, running 0.5 m (20 in) back into the mouth. Between 70 and 118 grooves (called ventral pleats) run along the throat parallel to the body length. These pleats assist with evacuating water from the mouth after lunge feeding (see feeding below).

The dorsal fin is small; its height averages about 28 centimetres (11 in), and usually ranges between 20 cm (8 in) and 40 cm (16 in), though it can be as small as 8 cm (3 in) or as large as 70 cm (28 in). It is visible only briefly during the dive sequence. Located around three-quarters of the way along the length of the body, it varies in shape from one individual to another; some only have a barely perceptible lump, but others may have prominent and falcate (sickle-shaped) dorsals. When surfacing to breathe, the blue whale raises its shoulder and blowhole out of the water to a greater extent than other large whales, such as the fin or sei whales. Observers can use this trait to differentiate between species at sea. Some blue whales in the North Atlantic and North Pacific raise their tail fluke when diving. When breathing, the whale emits a vertical single column spout, typically 9 metres (30 ft) high, but reaching up to 12 metres (39 ft). Its lung capacity is 5,000 litres (1,300 US gal). Blue whales have twin blowholes shielded by a large splashguard.

The flippers are 3–4 metres (10–13 ft) long. The upper sides are grey with a thin white border; the lower sides are white. The head and tail fluke are generally uniformly grey. The whale's upper parts, and sometimes the flippers, are usually mottled. The degree of mottling varies substantially from individual to individual. Some may have a uniform slate-grey color, but others demonstrate a considerable variation of dark blues, greys and blacks, all tightly mottled.

Blue whales can reach speeds of 50 kilometres per hour (31 mph) over short bursts, usually when interacting with other whales, but 20 kilometres per hour (12 mph) is a more typical traveling speed. When feeding, they slow down to 5 kilometres per hour (3 mph).

Blue whales most commonly live alone or with one other individual. It is not known how long traveling pairs stay together. In locations where there is a high concentration of food, as many as 50 blue whales have been seen scattered over a small area. They do not form the large, close-knit groups seen in other baleen species.

== Size ==

The blue whale is the largest animal ever known to have lived. By comparison, one of the largest known dinosaurs of the Mesozoic Era was *Argentinosaurus*, which is estimated to have weighed up to 90 tonnes (99 short tons), comparable to the average blue whale.

Blue whales are difficult to weigh because of their size. As a whole, blue whales from the Northern Atlantic and Pacific are smaller on average than those from Antarctic waters. Adult weights typically

range from 73 ? 136 tonnes (80 ? 150 short tons) . There is some uncertainty about the biggest blue whale ever found , as most data came from blue whales killed in Antarctic waters during the first half of the twentieth century , which were collected by whalers not well @-@ versed in standard zoological measurement techniques . The standard measuring technique is to measure in a straight line from the upper jaw to the notch in the tail flukes . This came about because the edges of the tail flukes were typically cut off , and the lower jaw often falls open upon death . Many of the larger whales in the whaling records (especially those over 100 feet) were probably measured incorrectly or even deliberately exaggerated . The heaviest weight ever reported was 173 metric tons (191 short tons) for a southern hemisphere female in 1947 , although it is likely that the largest blue whales would have weighed over 200 tons . The longest whales ever recorded were two females measuring 33 @.@ 6 and 33 @.@ 3 metres (110 and 109 ft) , although in neither of these cases was the piecemeal weight gathered .

Verified measurements rarely exceed 28 meters (92 ft) . The longest measured by Macintosh and Wheeler (1929) was a female 28 @.@ 5 m (93 @.@ 5 ft) , while the largest male was 26 @.@ 45 m (87 ft) , although one of the same authors later found a male of 26 @.@ 65 m (87 @.@ 5 ft) and stated that those lengths may be exceeded . The longest whale measured by scientists was 29 @.@ 9 metres (98 ft) long , Lieut . Quentin R. Walsh , USCG , while acting as whaling inspector of the factory ship Ulysses , verified the measurement of a 29 @.@ 9 m (98 ft) pregnant blue whale caught in the Antarctic in the 1937 ? 38 season . A 26 @.@ 8 m (88 ft) male was verified by Japanese scientists in the 1947 @-@ 48 whaling season . The longest reported in the North Pacific was a 27 @.@ 1 metres (89 ft) female taken by Japanese whalers in 1959 , and the longest reported in the North Atlantic was a 28 metres (92 ft) female caught in the Davis Strait . The average weight of the longest scientifically verified specimens (29 @.@ 9 m , 98 ft) would be calculated to be 176 @.@ 5 tonnes (194 @.@ 5 tons) , varying from 141 tonnes (155 @.@ 5 tons) to 211 @.@ 5 tonnes (233 @.@ 5 tons) depending on fat condition . One study found that a hypothetical 33 meter (108 foot) blue whale would be too large to exist in real life , due to metabolic and energy constraints .

Due to its large size , several organs of the blue whale are the largest in the animal kingdom . A blue whale 's tongue weighs around 2 @.@ 7 tonnes (3 @.@ 0 short tons) and , when fully expanded , its mouth is large enough to hold up to 90 tonnes (99 short tons) of food and water . Despite the size of its mouth , the dimensions of its throat are such that a blue whale cannot swallow an object wider than a beach ball . The heart of an average sized blue whale weighs 400 pounds (180 kg) and is the largest known in any animal . During the first seven months of its life , a blue whale calf drinks approximately 380 litres (100 US gal) of milk every day . Blue whale calves gain weight quickly , as much as 90 kilograms (200 lb) every 24 hours . Even at birth , they weigh up to 2 @,@ 700 kilograms (6 @,@ 000 lb) ? the same as a fully grown hippopotamus . Blue whales have proportionally small brains , only about 6 @.@ 92 kilograms (15 @.@ 26 lb) , about 0 @.@ 007 % of its body weight . The blue whale penis is the largest penis of any living organism and also set the Guinness World Record as the longest of any animal 's . The reported average length varies but is usually mentioned to have an average length of 2 @.@ 4 m (8 ft) to 3 @.@ 0 m (10 ft) .

== = Feeding == =

Blue whales feed almost exclusively on krill , though they also take small numbers of copepods . The species of this zooplankton eaten by blue whales varies from ocean to ocean . In the North Atlantic , *Meganyctiphanes norvegica* , *Thysanoessa raschii* , *Thysanoessa inermis* and *Thysanoessa longicaudata* are the usual food ; in the North Pacific , *Euphausia pacifica* , *Thysanoessa inermis* , *Thysanoessa longipes* , *Thysanoessa spinifera* , *Nyctiphanes simplex* and *Nematoscelis megalops* ; and in the Southern Hemisphere , *Euphausia superba* , *Euphausia crystallorophias* , *Euphausia valentini* , and *Nyctiphanes australis* .

An adult blue whale can eat up to 40 million krill in a day . The whales always feed in the areas with the highest concentration of krill , sometimes eating up to 3 @,@ 600 kilograms (7 @,@ 900 lb) of krill in a single day . The daily energy requirement of an adult blue whale is in the region of 1 @.@ 5

million kilocalories (6 @. @ 3 GJ) . Their feeding habits are seasonal . Blue whales gorge on krill in the rich waters of the Antarctic before migrating to their breeding grounds in the warmer , less @-@ rich waters nearer the equator . The blue whale can take in up to 90 times as much energy as it expends , allowing it to build up considerable energy reserves .

Because krill move , blue whales typically feed at depths of more than 100 metres (330 ft) during the day and only surface @-@ feed at night . Dive times are typically 10 minutes when feeding , though dives of up to 21 minutes are possible . The whale feeds by lunging forward at groups of krill , taking the animals and a large quantity of water into its mouth . The water is then squeezed out through the baleen plates by pressure from the ventral pouch and tongue . Once the mouth is clear of water , the remaining krill , unable to pass through the plates , are swallowed . The blue whale also incidentally consumes small fish , crustaceans and squid caught up with krill .

= = = Life history = = =

Mating starts in late autumn and continues to the end of winter . Little is known about mating behaviour or breeding grounds . In the fall , males will follow females for prolonged periods of time . Occasionally , a second male will attempt to displace the first , and the whales will race each other at speeds of up to 20 miles per hour (32 km / h) . This often causes the racing whales to breach , which is rare in blue whales . This racing behavior may even escalate to physical violence between the males . Scientists have observed this behavior in multiple parts of the world , including the Gulf of St. Lawrence in Canada and the South Taranaki Bight in New Zealand .

Females typically give birth once every two to three years at the start of the winter after a gestation period of 10 to 12 months . The calf weighs about 2 @. @ 5 tonnes (2 @. @ 8 short tons) and is around 7 metres (23 ft) in length . Blue whale calves drink 380 ? 570 litres (100 ? 150 U.S. gallons) of milk a day . Blue whale milk has an energy content of about 18 @, @ 300 kJ / kg (4 @, @ 370 kcal / kg) . The calf is weaned after six months , by which time it has doubled in length . The first video of a calf thought to be nursing was made 5 February 2016 .

Sexual maturity is typically reached at five to ten years of age . In the Northern Hemisphere , whaling records show that males averaged 20 ? 21 m (66 ? 69 ft) and females 21 ? 23 m (69 ? 75 ft) at sexual maturity , while in the Southern Hemisphere it was 22 @. @ 6 and 24 m (74 and 79 ft) , respectively . In the Northern Hemisphere , as adults , males averaged 24 m (79 ft) and females 25 m (82 ft) with average calculated weights of 90 @. @ 5 and 101 @. @ 5 tonnes (100 and 112 tons) , respectively . Blue whales in the eastern North Pacific population were found to be on average 0 @. @ 91 meters (3 ft) shorter , therefore with males averaging 23 @. @ 3 meters (76 ft) and 80 @. @ 5 tonnes (88 @. @ 5 tons) and females 24 meters (79 ft) and 90 @. @ 5 tonnes (100 tons) . Antarctic males averaged 25 m (82 ft) and females 26 @. @ 2 m (86 ft) , averaging 101 @. @ 5 and 118 tonnes (112 and 130 tons) . Pygmy blue whales average 19 @. @ 2 meters (63 feet) at sexual maturity , with males averaging 21 meters and females 22 meters (69 and 72 feet) when fully grown , averaging 76 and 90 tonnes (83 @. @ 5 and 99 tons) .

In the eastern North Pacific , photogrammetric studies have shown sexually mature (but not necessarily fully grown) blue whales today average 21 @. @ 7 m (71 ft) , and about 65 @. @ 5 tonnes (72 tons) with the largest found being about 24 @. @ 5 m (80 @. @ 5 ft) ? although a 26 @. @ 5 m (87 ft) female stranded near Pescadero , California in 1979 .

Antarctic blue whales gain 50 % of their lean body weight in the summer feeding season , i.e. a blue whale entering the Antarctic weighing 100 tons would leave weighing 150 tons . The fattened weight is 120 % the average weight and the lean weight is 80 % .

Scientists estimate that blue whales can live for at least 80 years , but since individual records do not date back into the whaling era , this will not be known with certainty for many years . The longest recorded study of a single individual is 34 years , in the eastern North Pacific .

The whales ' only natural predator is the orca . Studies report that as many as 25 % of mature blue whales have scars resulting from orca attacks . The mortality rate of such attacks is unknown .

= = = Strandings = = =

Blue whale strandings are extremely uncommon , and , because of the species ' social structure , mass strandings are unheard of . When strandings do occur , they can become the focus of public interest . In 1920 , a blue whale washed up near Bragar on the Isle of Lewis in the Outer Hebrides of Scotland . It had been shot by whalers , but the harpoon had failed to explode . As with other mammals , the fundamental instinct of the whale was to try to carry on breathing at all costs , even though this meant beaching to prevent itself from drowning . Two of the whale 's bones were erected just off a main road on Lewis and remain a tourist attraction .

In June 2015 , a female blue whale estimated at 12 @. @ 2 meters (40 feet) and 20 tonnes (22 tons) was stranded on a beach in Maharashtra , India , the first live stranding in the region . Despite efforts by the Albug forest department and local fisherman , the whale died 10 hours after being stranded . In August 2009 , a wounded blue whale was stranded in a bay in Steingrímsfjörður , Iceland . The first rescue attempt failed , as the whale (thought to be over 20 meters long) towed the > 20 ton boat back to shore at speeds of up to 7 miles per hour (11 km / h) . The whale was towed to sea after 7 hours by a stronger boat . It is unknown whether it survived . In December 2015 , a live blue whale thought to be over 20 metres (65 feet) long was rescued from a beach in Chile . Another stranded blue whale , thought to be about 12 @. @ 2 metres (40 feet) long , was rescued in India in February 2016 . Boats were used in all successful cases .

= = = Vocalizations = = =

Estimates made by Cummings and Thompson (1971) suggest the source level of sounds made by blue whales are between 155 and 188 decibels when measured relative to a reference pressure of one micropascal at one metre . All blue whale groups make calls at a fundamental frequency between 10 and 40 Hz ; the lowest frequency sound a human can typically perceive is 20 Hz . Blue whale calls last between ten and thirty seconds . Blue whales off the coast of Sri Lanka have been repeatedly recorded making " songs " of four notes , lasting about two minutes each , reminiscent of the well @- @ known humpback whale songs . As this phenomenon has not been seen in any other populations , researchers believe it may be unique to the *B. m. breviceauda* (pygmy) subspecies .

The purpose of vocalization is unknown . Richardson et al . (1995) discuss six possible reasons :

Maintenance of inter @- @ individual distance

Species and individual recognition

Contextual information transmission (for example feeding , alarm , courtship)

Maintenance of social organization (for example contact calls between females and males)

Location of topographic features

Location of prey resources

= = Population and whaling = =

= = = Hunting era = = =

Blue whales are not easy to catch or kill . Their speed and power meant that they were rarely pursued by early whalers , who instead targeted sperm and right whales . In 1864 , the Norwegian Svend Foyn equipped a steamboat with harpoons specifically designed for catching large whales . Although it was initially cumbersome and had a low success rate , Foyn perfected the harpoon gun , and soon several whaling stations were established on the coast of Finnmark in northern Norway . Because of disputes with the local fishermen , the last whaling station in Finnmark was closed down in 1904 .

Soon , blue whales were being hunted off Iceland (1883) , the Faroe Islands (1894) , Newfoundland (1898) , and Spitsbergen (1903) . In 1904 ? 05 the first blue whales were taken off South Georgia . By 1925 , with the advent of the stern slipway in factory ships and the use of steam @- @ driven whale catchers , the catch of blue whales , and baleen whales as a whole , in the

Antarctic and sub-Antarctic began to increase dramatically . In the 1930 - 31 season , these ships caught 29 , 400 blue whales in the Antarctic alone . By the end of World War II , populations had been significantly depleted , and , in 1946 , the first quotas restricting international trade in whales were introduced , but they were ineffective because of the lack of differentiation between species . Rare species could be hunted on an equal footing with those found in relative abundance .

Arthur C. Clarke , in his 1962 book Profiles of the Future , was the first prominent intellectual to call attention to the plight of the blue whale . He mentioned its large brain and said , " we do not know the true nature of the entity we are destroying . "

All of the historical coastal Asian groups were driven to near extinction in short order by Japanese industrial hunts . Those groups which once migrated along western Japan to the East China Sea were likely wiped out much earlier , as the last catches on Amami Oshima were between the 1910s and the 1930s , and the last known stranding records on the Japanese archipelago , excluding the Ryukyu Islands , were over a half century ago . Commercial catches were continued until 1965 and whaling stations targeting blues were mainly placed along the Hokkaido and Sanriku coasts .

Blue whale hunting was banned in 1966 by the International Whaling Commission , and illegal whaling by the Soviet Union finally halted in the 1970s , by which time 330 , 000 blue whales had been caught in the Antarctic , 33 , 000 in the rest of the Southern Hemisphere , 8 , 200 in the North Pacific , and 7 , 000 in the North Atlantic . The largest original population , in the Antarctic , had been reduced to a mere 360 individuals , about 0 . 15 % of their initial numbers .

== Population and distribution today ==

Since the introduction of the whaling ban , studies have examined whether the conservation reliant global blue whale population is increasing or remaining stable . In the Antarctic , best estimates show an increase of 7 . 3 % per year since the end of illegal Soviet whaling , but numbers remain at under 1 % of their original levels . Recovery varies regionally , however , and the Eastern North Pacific blue whale population (historically a relatively small proportion of the global total) has rebounded to about 2 , 200 individuals , an estimated 97 % of its pre-whaling population .

The total world population was estimated to be between 5 , 000 and 12 , 000 in 2002 , although there are high levels of uncertainty in available estimates for many areas . A more recent estimate by the IUCN puts the global population at 10 , 000 - 25 , 000 .

The IUCN Red List counts the blue whale as " endangered " , as it has since the list 's inception . In the United States , the National Marine Fisheries Service lists them as endangered under the Endangered Species Act . The largest known concentration , consisting of about 2 , 800 individuals , is the northeast Pacific population of the northern blue whale (*B. m. musculus*) subspecies that ranges from Alaska to Costa Rica , but is most commonly seen from California in summer . Infrequently , this population visits the northwest Pacific between Kamchatka and the northern tip of Japan .

=== North Atlantic ===

In the North Atlantic , two stocks of *B. m. musculus* are recognised . The first is found off Greenland , Newfoundland , Nova Scotia and the Gulf of Saint Lawrence . This group is estimated to total about 500 . The second , more easterly group is spotted from the Azores in spring to Iceland in July and August ; it is presumed the whales follow the Mid-Atlantic Ridge between the two volcanic islands . Beyond Iceland , blue whales have been spotted as far north as Spitsbergen and Jan Mayen , though such sightings are rare . Scientists do not know where these whales spend their winters . The total North Atlantic population is estimated to be between 600 and 1 , 500 . Off Ireland , the first confirmed sightings were made in 2008 , since then Porcupine Seabight has been regarded as a prominent habitat for the species along with fin whales .

===== North Pacific =====

Five or more subpopulations have been suggested , and several of these mainly in western north Pacific have been considered either functionally or virtually extinct . Of the populations that once existed off coastal Japan , the last recorded confirmed stranding was in the 1910s . Today , call types suggest only two populations in the north Pacific . Some scientists regard that historical populations off Japan were driven to extinction by whaling activities , mostly from the Kumanonada Sea off Wakayama , in Gulf of Tosa , and in the Sea of Hy?ga . Nowadays , possible vagrants from either eastern or offshore populations are observed on very rare occasions off Kushiro . There were also small , but constant catch records around the Korean Peninsula and in the coastal waters of the Sea of Japan although this species is normally considered not to frequent into marginal seas , such as the Sea of Okhotsk , on usual migrations . Whales were known to migrate further north to eastern Kamchatka , the Gulf of Anadyr , off Abashiri or southern Sea of Okhotsk , and the Commander Islands . Only three sightings were made between 1994 and 2004 in Russia and the last known occurrence in eastern Sea of Okhotsk was in 1948 . In addition , whales have not been confirmed in Commander Islands for over past 80 years . Historically , wintering grounds existed off the Hawaiian Archipelago , Northern Mariana Islands , Bonin Islands and Ryukyu Islands , Philippines , Taiwan , Zhoushan Archipelago , and South China Sea coasts such as in Daya Bay , Leizhou Peninsula , and Hainan Island , and further south to Paracel Islands . Archaeological records suggest Blue whales once migrated into Sea of Japan , coasts of Korean Peninsula and northwestern Kyushu , and to Yellow and Bohai Sea as well . During cetacean sighting visual surveys in Tsushima Strait conducted by Japanese Coast Guard , several gigantic whales measuring over 20m in length have been observed in recent years , however their exact identities are unclear . A stranding was recorded in Wanning in 2005 . Although the exact species is unclear , a large rorqual with small dorsal fin was observed in pelagic water of China or Taiwan in 2012 . For further status in Chinese and Korean waters , see Wildlife of China .

As of 2014 , the Eastern North Pacific blue whale population has rebounded to an estimated 2 @, @ 200 individuals , which is thought to be about 97 % of its pre @-@ whaling numbers .

===== Southern Hemisphere and vicinity to Northern Indian Ocean =====

In the Southern Hemisphere , there appear to be two distinct subspecies , *B. m. intermedia* , the Antarctic blue whale , and the little @-@ studied pygmy blue whale , *B. m. breviceuda* , found in Indian Ocean waters . The most recent surveys (midpoint 1998) provided an estimate of 2 @, @ 280 blue whales in the Antarctic (of which fewer than 1 % are likely to be pygmy blue whales) . Estimates from a 1996 survey show that 424 pygmy blue whales were in a small area south of Madagascar alone , thus it is likely that numbers in the entire Indian Ocean are in the thousands . If this is true , the global numbers would be much higher than estimates predict .

Several congregating grounds are recently confirmed in Oceania , such as Perth Canyon off Rottnest Island , the Great Australian Bight off Portland , and in South Taranaki Bight . Southern blue and pygmy blue females use waters off Western Australia , and coastal areas of eastern North Island of New Zealand , from Northland waters such as the Bay of Islands and Hauraki Gulf to the Bay of Plenty in the south , as breeding and calving grounds . Whales off southern and western Australia are known to migrate into tropical coastal waters in Indonesia , Philippines , and off East Timor . (Animals in the Philippines may or may not originate from North Pacific populations or from a pygmy blue population in the northern Indian ocean as whales regularly appear off Bohol , north of the Equator .) At least on occasions , whales also migrate through remote islands such as Cook Islands , and Chilean pelagic waters adjacent to Easter Island and Isla Salas y Gómez , where possibilities of undiscovered wintering grounds have been considered . Both true and pygmy blue whales are expected to migrate to Fiji .

Blue whales also migrate through western African waters such as off Angola and Mauritania , and at least whales around Iceland are known to migrate to Mauritania .

===== Subspecies ' distribution =====

A fourth subspecies, *B. m. indica*, was identified by Blyth in 1859 in the northern Indian Ocean, but is now thought to be the same subspecies as *B. m. breviceps*, the pygmy blue whale. Records for Soviet catches seem to indicate that the female adult size is closer to that of the pygmy blue than *B. m. musculus*, although the populations of *B. m. indica* and *B. m. breviceps* appear to be discrete, and the breeding seasons differ by almost six months. Along mainland Indian coasts, appearances of whales had been very scarce that excluding unconfirmed record(s), the first blue whale since after the last stranding record in Maharashtra in 1914, was sighted off Kunkeshwar along with several Bryde's whales in May 2015.

Migratory patterns of these subspecies are not well known. For example, pygmy blue whales have been recorded in the northern Indian Ocean (Oman, Maldives and Sri Lanka), where they may form a distinct resident population. In addition, the population of blue whales occurring off Chile and Peru may also be a distinct subspecies. Some Antarctic blue whales approach the eastern South Atlantic coast in winter, and occasionally, their vocalizations are heard off Peru, Western Australia, and in the northern Indian Ocean. In Chile, the Cetacean Conservation Center, with support from the Chilean Navy, is undertaking extensive research and conservation work on a recently discovered feeding aggregation of the species off the coast of Chiloé Island in the Gulf of Corcovado (Chiloé National Park), where 326 blue whales were spotted in 2007. In this regions, it is normal for blue whales to enter Fiords. Whales also reach southern Los Lagos, such as off Caleta Zorra, live along with other rorquals.

Efforts to calculate the blue whale population more accurately are supported by marine mammalogists at Duke University, who maintain the Ocean Biogeographic Information System ? Spatial Ecological Analysis of Megavertebate Populations (OBIS @-@ SEAMAP), a collation of marine mammal sighting data from around 130 sources.

===== Threats other than hunting =====

Due to their enormous size, power and speed, adult blue whales have virtually no natural predators. There is one documented case in National Geographic Magazine of a blue whale being attacked by orcas off the Baja California Peninsula; although the orcas were unable to kill the animal outright during their attack, the blue whale sustained serious wounds and probably died as a result of them shortly after the attack. In March 2014, a pack of orcas harassed a blue whale off of California, with one of them biting the tip of the blue whale's tail fluke. The blue whale attempted to tail slap the orca and fled at high speed. Up to a quarter of the blue whales identified in Baja bear scars from orca attacks.

Blue whales may be wounded, sometimes fatally, after colliding with ocean vessels, as well as becoming trapped or entangled in fishing gear. Ship strikes in particular have killed many blue whales in California. In September 2007, three dead blue whales washed up in southern California after being killed by ship strikes. Ship strikes are also a serious problem in Sri Lanka, although scientists believe this problem could be nearly eliminated by moving the shipping lanes 15 nautical miles to the south. The ever @-@ increasing amount of ocean noise, including sonar, drowns out the vocalizations produced by whales, which makes it harder for them to communicate. Blue whales stop producing foraging D calls once a mid @-@ frequency sonar is activated, even though the sonar frequency range (1 ? 8 kHz) far exceeds their sound production range (25 ? 100 Hz). Human threats to the potential recovery of blue whale populations also include accumulation of polychlorinated biphenyl (PCB) chemicals within the whale's body.

With global warming causing glaciers and permafrost to melt rapidly and allowing a large amount of fresh water to flow into the oceans, there are concerns that if the amount of fresh water in the oceans reaches a critical point, there will be a disruption in the thermohaline circulation. Considering the blue whale's migratory patterns are based on ocean temperature, a disruption in this circulation, which moves warm and cold water around the world, would be likely to have an effect on their migration. The whales summer in the cool, high latitudes, where they feed in krill

@-@ abundant waters ; they winter in warmer , low latitudes , where they mate and give birth .
The change in ocean temperature would also affect the blue whale 's food supply . The warming trend and decreased salinity levels would cause a significant shift in krill location and abundance .

= = Museums = =

The Natural History Museum in London contains a famous mounted skeleton and life @-@ size model of a blue whale , which were both the first of their kind in the world , but have since been replicated at the University of California , Santa Cruz . Similarly , the American Museum of Natural History in New York City has a full @-@ size model in its Milstein Family Hall of Ocean Life . A juvenile blue whale skeleton is installed at the New Bedford Whaling Museum in New Bedford , Massachusetts .

The Aquarium of the Pacific in Long Beach , California features a life @-@ size model of a mother blue whale with her calf suspended from the ceiling of its main hall . The Beaty Biodiversity Museum at the University of British Columbia , Canada , houses a display of a blue whale skeleton (skull is cast replica) directly on the main campus boulevard . A real skeleton of a blue whale at the Canadian Museum of Nature in Ottawa was also unveiled in May 2010 .

The Museum of Natural History in Gothenburg , Sweden contains the only stuffed blue whale in the world . There one can also find the skeleton of the whale mounted beside the whale . Two skeletons are held in Ukraine in Odessa and Kherson .

The Melbourne Museum and Museum of New Zealand Te Papa Tongarewa both feature a skeleton of the pygmy blue whale . The North Carolina Museum of Natural Sciences in Raleigh , North Carolina features a mounted skeleton of a blue whale .

The South African Museum in Cape Town , South Africa , features a considerable hall devoted to whales and natural history known as the Whale Well . The centrepiece of the exhibit is a suspended mounted Blue Whale skeleton , gleaned from the carcass of a partially mature specimen which washed ashore in the mid 1980s . The skeleton 's jaw bones are mounted on the floor of Whale Well to permit visitors a direct contact with them , and to walk between them so as to appreciate the size of the animal . Other mounted skeletons include that of a Humpback Whale and a Right Whale , together with in @-@ scale composite models of other whales , dolphins and porpoises .

The Tokyo National Museum in Ueno Park displays a life @-@ sized model of a blue whale in the front . Several other institutions such as Tokai University and Taiji Whale Museum hold skeleton of skeleton model of Pygmy blue whales , while several churches and buildings in western Japan including Nagasaki Prefecture display jawbone of captured animals as a gate .

= = Whale @-@ watching = =

Blue whales may be encountered (but rarely) on whale @-@ watching cruises in the Gulf of Maine and are the main attractions along the north shore of the Gulf of Saint Lawrence and in the Saint Lawrence estuary . Blue whales can also be seen off Southern California , starting as early as March and April , with the peak between July and September . More whales have been observed close to shore along with fin whales .

In Chile , the Alfaguara project combines conservation measures for the population of blue whales feeding off Chiloé Island with whale watching and other ecotourism activities that bring economic benefits to the local people . Whale @-@ watching , principally blue whales , is also carried out south of Sri Lanka . Whales are widely seen along the coast of Chile and Peru near the coast , occasionally making mixed groups with fin , sei , and Bryde 's whales .

In Australia , pygmy blue and Antarctic blue whales have been observed from various tours in almost all the coastlines of the continent . Among these , tours with sightings likely the highest rate are on west coast such as in Geographe Bay and in southern bight off Portland . For later , special tours to observe pygmy blues by helicopters are organized .

In New Zealand , whales have been seen in many areas close to shore , most notably around the Northland coast , in the Hauraki Gulf and the Bay of Plenty , off South Taranaki Bight , in Cook Strait

and off Kaikoura with remarkably increasing sighting trends in recent years with some whales started staying in the same area near the shore for several days . Similar approaches with Portland 's case to use helicopters was once attempted in South Taranaki Bight , but seemingly been cancelled according to considerations .