

Everything You Ever Wanted To Know About Killer Whales But Were Afraid To Ask



Key Facts

Distribution:

- *Orcinus* (or-SINE-iss) *orca* swims in every ocean in the world.
- Killer whales in BC are known to roam the coast between Alaska and California.

Size:

- A toothed whale, the killer whale, is the largest member of the dolphin family. Males (or bulls) can reach 9 m (29.5 ft) and 10,000 kg; females reach 8 m and 7,500 kg. Newborns are approximately 2 m long and weigh 150 kg.
- The dorsal fin of males can reach 1.7 m in height; females, 1 m.
- Pectoral (side) flippers of males may reach 2.5 m in length and are much broader than those of the females.
- Tail flukes of mature males curl downward, females do not.

Food Requirements:

- Their massive bulk is fuelled by 75 kilograms (165 lbs) of food daily.

Life Expectancy:

- A killer whale's life expectancy averages 50 years for a female and 29 yrs for a male. Some killer whales have been known to live more than 80 years. Granny, J2, is estimated to be 98 years old.

- Females usually have their first calf between the ages of 12-14. Gestation is 16-17 months. Calves of residents seem to be born in the winter months – mating occurs during encounters with other pods in the summer months. Calves nurse for about 1 year but start taking solid food around 6 months of age.

Speed and Depth:

- Top speed during travel or when chasing prey is roughly 45 km/h.
- Typical dive times are less than five minutes; the maximum recorded locally was 15 minutes in a transient group. The maximum dive depth is unknown; killer whales in BC are unlikely to dive very deep as their prey is usually found in the top 100 m.

How to ID a Killer Whale:

- Distinguishing one whale from another is the key to understanding population dynamics, behaviours, and habitat needs. In the 1970's, it was discovered that individual animals could be identified through photographs of nicks, scratches, and unique saddle patch markings. This is called Photo-Identification (Photo-ID).



- It was also learned that different whale groups have their own “dialects”, specific calls used only by their group. On average, each resident pod has a repertoire of 12 separate types of calls. All members of a pod will use all of the calls. These calls are recorded with a hydrophone.
- Photo-ID catalogues and hydrophone recordings have been complemented with genetic profiles drawn from biopsies of skin and blubber.
- Scientists now know that there are at least three distinct races, or eco-types, of killer whales off the BC coast. They have different diets and hunting habits, are genetically unrelated, and have completely different social structures and behaviours. See “Differences Between Killer Whale Families” below.

Killer Whale Activities:

- Activities of both residents and transients can be grouped into four major categories: looking for food (foraging), resting, socializing and travelling. All of these seem to happen both day and night.
- Foraging is the most common activity, comprising about 60 percent of their daily activity. Resident pods in BC forage cooperatively and prey is often shared between individuals, particularly between mature females and juveniles. Mature males may sometimes hunt and eat independently from the rest of their group.
- Members of transient groups cooperate to chase, corner, and kill and share their prey.
- When resting, pod members slow down, group together tightly, become mainly silent and dive synchronously for 4-5 minutes or longer. Resting episodes usually last 2-3 hours. (resident whales)
- Socializing consists of sexual interactions and play among pod members. Beach rubbing is a traditional social behaviour among some northern resident pods.

Killer Whale Behaviours:

- Spyhopping (sticking their head out of the water) and aerial displays, such as breaching, tail slapping, dorsal-fin slapping, are most commonly seen during socializing episodes. These behaviours may represent play, but may also occur in other contexts, such as foraging.
- Spyhopping seems to be a way of looking at the whales' surroundings; killer whales often spyhop when boats approach closely.
- Aerial behaviours are most likely displays of social excitement, dominance, or aggression. Transients may breach to startle or confuse prey, and tail-slap to stun or injure prey.

Other Key Facts:

- Like most other dolphins, killer whales have well developed eyesight (both above and below the water).

Differences Between Killer Whale Families:

Resident Killer Whales:

- When we speak of killer whale pods we mean resident killer whales. These whales form family groups that stay together for life.
- The pods are matrilineal – they consist of groups of siblings led by their mothers. If you see a big bull killer whale swimming out ahead of the pack, don't assume that bull is the leader. It is the son of an older female within the pod.
- Resident killer whales are fish eaters. More than 90 percent of their diet is salmon; with two-thirds of those being Chinook, the largest of our five Pacific salmon species.

- Their penchant for salmon makes them the most predictable killer whales as they follow fish runs to their natal streams.
- Because of their seasonal predictability, they are the mainstay of BC's multi-million-dollar whale-watching industry.
- Sometimes pods come together in a super-pod. It's believed these gatherings may include breeding bouts in which males from one pod mate with females from another. By choosing a mate with a different dialect, killer whales avoid breeding with members of their own pods.
- Any male seen swimming in a pod doesn't have children within that pod. They are the fathers of killer whales in a different pod.

Southern Residents swim the Salish Sea for much of the summer. Hot spots for sightings are Lime Kiln Point, on San Juan Island, and Boundary Pass, off the Southeast end of Saturna Island.

- Three pods – J, K, and L – make up the southern population. Totalling fewer than 90 at last check, they are Pacific Canada's endangered killer whales, threatened by diminishing fish stocks, environmental contaminants and disturbance from marine traffic.
- These pods were also the most affected by captures for aquariums in the 1960's and 1970's. By 1975, more than 50 killer whales had been captured, in BC and Washington, and at least a dozen died during the captures.
- Smaller, more manageable whales were targeted; removing a significant breeding cohort that will require many generations to recover.
- It's possible that within J, K, and L pods there are too few males of breeding age to produce enough offspring to sustain the southern resident population. The potential loss of this entire population is real.

Northern Residents frequent the waters of Johnstone and Queen Charlotte Straits, off northern Vancouver Island, in the summer.

- This northern population is unrelated to southern residents. It is comprised of 16 pods, totalling approximately 250 whales.
- Although the northern resident population is faring better than southern killer whales, they nonetheless face similar challenges. They are designated as "threatened," one step down from "endangered."
- Under Canada's Species at Risk Act, passed in 2002, the federal government is legally obliged to enact recovery plans for threatened and endangered species.
- There is currently a proposal for an allotment of salmon specifically for resident killer whales, a suggestion that was balked at by fisherman and governments in the 1990's. At that time, it was estimated that the southern resident population alone would consume 4,500 to 9,000 kilograms (9,900 to 19,800 pounds) of salmon a day.

Transient Killer Whales:

- Transient killer whales are the notorious wolves of the ocean. They roam widely in search of the warm-blooded flesh of seals, sea-lions, dolphins, porpoises, and larger whales.
- Transients do not form pods or families. They hunt in small packs, frequently changing travel companions.
- They use fewer calls than residents. Their calls are similar across their population of about 250 animals.
- As predators that hunt “fish-eating prey”, they are at the top of the food-web, one step above resident killer whales.
- Environmental contaminants such as PCB’s and organochlorines become concentrated as they move up the food web, so the top predators absorb the highest concentrations of pollutants.
- BC’s transient killer whales are considered among the most contaminated animals on earth. They are designated as “threatened.”

Offshore Killer Whales:

- Large groups of mystery whales were seen periodically off the BC coast in the 1970’s and 1980s, but confirmation of yet another population of whales – known as offshore killer whales- wasn’t confirmed until the early 1990s.
- Hilltop spotters for whale-watching companies reported an enormous shoal of killer whales – maybe 60 or 70 milling about Hein bank, in the middle of Juan de Fuca Strait. Researchers from BC and Washington raced out and photographed the whales and recorded their underwater calls with hydrophones. Unlike the Salish Sea’s resident J, K, and L pods, these whales were boat-shy, and appeared skittish in confined areas.
- Closer examination of the photos and calls revealed that at least two individuals had been seen three weeks earlier off Langara Island, the northernmost Queen Charlotte Island.
- It was the start of an era of several encounters with offshore killer whales. They’ve since been documented ranging from Los Angeles to Alaska’s Aleutian Islands.
- Their habit of travelling in groups larger than a couple of dozen whales suggests their feeding strategy requires a large team, or that they target species that occur in abundance. Unlike resident killer whales that herd salmon against underwater walls, offshores likely hunt in open water.
- It’s thought that they are fish-eaters. Wear on their teeth suggests that they may eat certain species of sharks, which have skin like sandpaper.
- Pacific killer whales have been seen out as far as 3,700km (2,300 miles). It’s unknown whether these killer whales are the same offshore whales that we see off the BC coast.
- At last check, the population of offshores was estimated to be 300.

- In designating offshores as a species of “special concern,” the Committee on the Status of Endangered Wildlife in Canada noted that these whales are at risk by sharing travel routes with oil tankers.

Recent Killer Whale Research:

- The following are notes from a lecture given by Ken Balcomb on Sept 17, 2009, titled, “Where’s the Fish?”
- Since the mid-90s, the southern resident killer whale population has been declining; there has been a low birth rate and high mortality.
- In a recent article, published in Biological Letters, Sept 14, 2009, it was shown there is a strong correlation between numbers of Chinook salmon and killer whale populations. In years there were better than average Chinook returns, there was less mortality. In years where Chinook returns are lower than average, there is increased killer whale mortality.
- 70% of the southern resident diet is Chinook salmon.
- Population estimates for Puget Sound Chinook are about 22, 000 but the killer whale population needs about 1,000 fish per day. This is not enough fish for all the killer whales.
- To compound the problem, nutritional stress causes the animals to metabolize more of their fat stores. Southern resident killer whales have the highest levels of PCB contamination of any whales in BC. Using their fat releases this toxic load into the body and may be a factor in the increased mortality.