



KILLER WHALE (*Orcinus orca*)



DESCRIPTION

Killer whales (otherwise known as 'orca whales') have an unmistakable black and white coloration pattern that includes a white "eye-patch" behind the eye, a white underbelly that extends up to the lower lip, white flank patches on their sides, and a gray saddle patch behind their dorsal fin. The white and gray patches vary considerably in size and shape, both among different populations throughout the world, and individual animals. Males grow to be much larger than females and have disproportionately larger fins than females, especially the dorsal fin which can be 6 feet tall.

OVERVIEW

- **Oregon Conservation Strategy Species**
- **Federal Listing Status:** Southern Resident DPS Endangered
- **Length:** Males up to 30 feet, females to 26 feet
- **Weight:** Max measured 15,520 pounds for a 26-foot male, 10,340 pounds for a 22-foot female
- **Lifespan:** Females up to 80-90 years, males up to 50-60 years
- **Similar Species:** Dolphins, porpoises, toothed whales
- **Key Strategy Habitats:** Estuaries, Nearshore

FUN FACTS

- **Favorite Food:** Varies, the three 'ecotypes' of killer whales in Pacific northwest waters eat distinctly different foods. Residents prefer salmon, especially Chinook. Transients eat marine mammals. Offshore killer whales specialize in eating sharks, especially sleeper sharks.
- Each pod and subgroup has its own distinct culture and distinct language.
- Killer whales are the largest member of the dolphin family.
- Killer whales can be found throughout the world's oceans from the Arctic to the Antarctic.

RANGE AND DISTRIBUTION

In Oregon: The waters off the coast of Oregon are proposed to be included as part of the Critical Habitat for the Southern Resident Killer Whale DPS, which is composed of the whales in what are known as J, K, and L pods. The proposed Critical habitat is based on satellite tagging and survey work that revealed their use of these waters. Transient killer whales are often seen off the Oregon Coast in late spring (late April thru early June, when gray whales are migrating north with their newly born calves. They can be spotted anywhere along the entire Oregon coast, but are most commonly seen off the coasts of Newport and Depoe Bay and they sometimes come into the Yaquina Bay estuary. Offshore killer whales are most often seen in deeper waters well away from the coastline.



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Everywhere Else: Killer whales occur throughout the world's oceans, from the Arctic to the Antarctic.

LIFE HISTORY AND ECOLOGY

Killer whales, or orca whales, are found throughout the world's oceans, but they are most frequently found in colder waters within about 500 miles of major continents. Although they are all currently classified as a single species, scientists suggest that given that there are a number of populations that have distinct genetic, behavioral, morphological and ecological characteristics, that there may be several subspecies or even different species. The social structure, feeding habits, vocalization patterns, and physical appearance can differ, and sometimes the different types even overlap spatially to some extent. For example, five distinct types have been described in the waters around Antarctica, with one type being about 50% smaller on average than one of the other types.

Much of what is known about killer whale life history is based on studies of animals in the waters off the Pacific Northwest of North America where three distinct types have been observed and described:

Transient orcas live in small social groups, called pods, of 3 to 7 and prey on marine mammals like seals, sea lions, other dolphins, and the occasional large whale or their calves. They are largely silent while hunting to avoid alerting their prey to their presence.

Resident orcas live relatively close to shore in large pods of usually 10 to 20 and prey on fish, primarily salmon. These killer whales utilize their echolocation abilities when hunting. Their vocalizations used for communication are known to have distinct dialects that reflect their maternal lineages.

Offshore orcas are similar to residents but have smaller bodies and rounded dorsal fins that are serrated on the trailing edge. These killer whales eat fish and seem to specialize on sleeper sharks in particular. Their teeth are often worn down from the rough skin of their prey.

All three types of killer whale in Pacific Northwest waters are genetically distinct and do not interbreed or associate with one another. Killer whales are strongly matrilineal, with each pod behaving differently based on learned behaviors handed down through generations, with older females doing a majority of group leadership. Researchers can identify and track individual pods based on unique acoustic signatures of each individual and group. In fact, you too can listen in to hydrophones (underwater microphones) set up in Puget Sound to gather information on killer whale activities there on a website called Orcasound (<https://www.orcasound.net/>).

Orcas are *polygynandrous*, meaning that both males and females can have multiple partners in a breeding season. Breeding is most common in the summer, but can occur year-round. Males are not involved in the raising of young. Females give birth to one calf after a 15 to 18 months of pregnancy, which they wean after about a year. Calves in resident pods usually never leave the pods they are born into. Transient killer whale calves are more likely to leave their pods as they get older and reach sexual maturity. Females give birth to viable calves at about 12-14 years of age and the interval between giving birth averages about 5 years. They typically have about 5 calves during their lifetime, but can live for many years after they stop giving birth. Females live about 50 years on average, but can live as long as 80-90 years. Males reach sexual maturity at about 15 years and continue to grow to physical maturity until about 21. Male life spans are shorter than females, averaging about 30 years. Killer whales are social animals and their social structure is based on at least some offspring staying with



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their mother's pod throughout their entire lives. The resident killer whales in the Pacific Northwest are the most extreme example. These pods sometimes include up to five generations.

Killer whales are apex predators, meaning that they are at the top of the food web, and have no natural predators other than humans. Killer whales are still hunted in a number of coastal villages in various parts of the world, like Japan, Greenland, Indonesia and islands in the Caribbean.

DIET AND FORAGING

Transient killer whales hunt marine mammals like seals, sea lions, other dolphins, and even whales, especially calves. Much like wolves, orcas hunt in packs to secure their prey tactically and efficiently. Resident and Offshore orcas do not feed on marine mammals like Transient orcas. Instead, resident orcas feed primarily on fish. Residents specialize on salmon. Offshore killer whales specialize on sharks.

Killer whales can locate their prey using echolocation. They emit clicking sounds that bounce off of underwater sea life and objects, then listen for echoes to inform them of the size, shape, distance to, and direction of their prey. But killer whales that eat marine mammals do not rely on echolocation to find their prey, because the sounds killer whales make can warn these prey species to their presence.

Orcas are known to eat more than 140 different species of prey and specialization on certain prey species have been noted for some populations. Known prey specializations are very diverse and include herring, salmon, bluefin tuna, sharks, rays, penguins, and marine mammals.

HABITAT

Orcas are found in every ocean on the planet. They seem to prefer colder waters, but have been observed in tropical waters as well. Limited studies of diving behavior found that killer whales can dive to over 2,500 feet.

CONSERVATION AND MANAGEMENT

Threats: Populations of killer whales are threatened by a number of factors, including climate change, noise pollution, and declining salmon populations. Some have recently experienced reproductive difficulties and have become more susceptible to disease as a result of toxic chemicals like DDT and PCB which accumulate through the food web to orcas, and have been recognized as a serious threat to survival of orca populations around the world. Due to heavy contaminant loads being passed from mother to calf, the first calf of a female killer whale rarely survives.

REFERENCES

Carretta, J. V., K. A. Forney, E. M. Oleson, D. W. Weller, A. R. Lang, J. Baker, M. M. Muto, B. Hanson, A. J. Orr, H. Huber, M. S. Lowry, J. Barlow, J. E. Moore, D. Lynch, L. Carswell, and R. L. Brownell Jr. 2020. U.S. Pacific Marine mammal stock assessments: 2019. U. S. Department of Commerce NOAA Technical Memorandum NMFS-SWFSC-629.



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- Desforges, J. P., A. Hall, D. McConnel, A. Rosing-Asvid, J. L. Barber, A. Brownlow, S. De Guise, I. Eulaers, P. D. Jepson, R. J. Letcher, M. Levin, P. S. Ross, F. Samarra, G. Vikingson, C. Sonne, R. Dietz. 2018. Predicting global killer whale population collapse from PCB pollution. *Science*. 361:1373-1376.
- Ford, J. K. B. 2018. Killer whale *Orcinus orca*. In B. Würsig, J. G. M. Thewissen, and K. M. Kovacs (Eds.), *Encyclopedia of marine mammals* (Third edition, pp. 531–537). Burlington, MA: Academic Press.
- Ford, J. K. B., G. Ellis, C. O. Matkin, M. H. Wetklo, L. G. Barrett-Lennard, R. E. Withler. Shark predation and tooth wear in a population of northeaster Pacific killer whales. *Aquatic Biology*. 11:2013-224.
- Hanson, M. B., R. W. Baird, J. K. Ford, J. Hempelmann-Halos, D. M. Van Doornik, J. R. Candy, C. K. Emmons, G. S. Schorr, B. Gisborne, K. L. Ayres, S. K. Wasser, K. C. Balcomb, K. Balcomb-Bartok, J. G. Sneva, M. J. Ford. 2010. Species and stock identification of prey consumed by endangered southern resident killer whales in their summer range. *Endangered Species Research* 11:69-82.
- Morin, P.A., F.I. Archer, A. D. Foote, J. Vilstrup, E. E. Allen, P. Wade, J. Durban, K. Parsons, R. Pitman, L. Li, P. Bouffard, S. D. A. Nielsen, M. Rassmussen, E. Willerslev, M. R. P. Gilbert, and T. Harkins. 2010. Complete mitochondrial genome phylogeographic analysis of killer whales (*Orcinus orca*) indicates multiple species. *Genome Research*. 29:908-916.
- Pitman, R. L., W. L. Perryman, D. LeRoi, and E. Eilers. 2007. A dwarf form of killer whale in Antarctica. *Journal of Mammalogy*. 88: 43-48.
- Resinger, R. R., M. Keith, R. D. Andrews, and P. J. N. de Bruyn. 2015. Movement and diving of killer whales (*Orcinus orca*) at a Southern Ocean archipelago. *Journal of Experimental Marine Biology and Ecology*. 473: 90-102.
- Ross, P. S., G. M. Ellis, M. G. Ikonomou, L. G. Barret-Lennard, and R. F. Addison. 2000. High PCB concentrations in free-ranging Pacific killer whales, *Orcinus orca*: Effects of age, sex, and dietary preference. *Marine Pollution Bulletin*. 40: 501-515.