

Orca Whale Curriculum

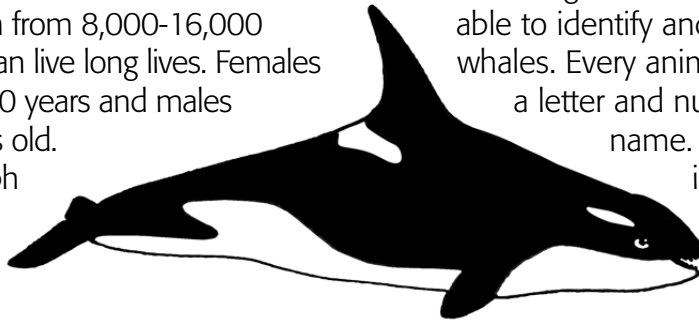
Background Information

What Is An Orca Whale?

Orca whales are the largest member of the dolphin family. They are a top predator in all the oceans of the world. Orcas (*Orcinus orca*) are well known for their strong family ties and often live together in family groups. They are noted for their strength, beauty and intelligence.

Orca Facts

The large fin on an orca's back makes it easy to spot them. Adult male orcas may be 30 feet long and have a dorsal fin up to 6 feet tall. Female orcas can reach a length of 25 feet and have smaller dorsal fins. Orcas weigh from 8,000-16,000 pounds. Orca whales can live long lives. Females sometimes live up to 90 years and males may live to be 60 years old. Orcas can swim 30 mph briefly and dive to 1,000 feet.



Puget Sound Orca Families

Seattle is the world's only major metropolitan area with a resident population of orcas. Three orca families called J, K and L pods swim regularly in our local waters. Sometimes they can be seen in Elliott Bay. Each family or pod is led by older female whales. The orcas in the resident pods stay together all of their lives. Males leave for short periods to mate with females in other groups but then return to live with their mother and other family members. Puget Sound orca families are also unusual in that they feed primarily on salmon.

Other Northwest orca whales live north of Puget Sound. Several pods totaling over 200 whales are resident in British Columbia waters. These northern pods and our local resident pods don't intermingle.

Orca babies stay with their mothers for a long time. Their mothers spend much of their time

teaching the baby how to hunt for food. Other whales in the pod sometimes "babysit" so mom can have a break. Orphaned whales may be adopted by other adults in the group who then raise them to adulthood.

Who Is That Orca?

Each orca has a light-colored saddle patch on their backs next to the base of their dorsal fin. The saddle patch, like human fingerprints, is unique in each animal. The dorsal fin of each whale is also unique. By carefully photographing and studying the dorsal fin and saddle patch of each Puget Sound orca, scientists have been able to identify and name all of our resident orca whales. Every animal in each pod is assigned a letter and number as well as a common name. For instance, J-16 is "Slick". She is a member of J pod and the mother of J-33 called "Keet".

Orca Speak

Sound is very important to orca whales. If you traveled with orcas, you would soon discover it's not quiet under Puget Sound. Much of the sound underwater comes from boats traveling above. Noisy environments are thought to be harmful to whales as they may interrupt whale communication.

Orcas use two forms of communication: echolocation (a type of sonar) and vocalization. They use echolocation sounds to hunt for food. Sound waves produced by the whales travel through the water, strike an object and bounce back to the whale that then uses these echoes to home in on food or navigate. Orcas also make communication calls that can travel long distances through water and help keep pods together when they are traveling or hunting. Each pod uses unique calls and also shares calls with related groups.

What Do Orcas Do?

Orca whales do many of the same things people do: they learn, play, look for food and protect their families. While watching orcas you may see them do amazing things.

Breach: Orcas leap out of the water and crash back down. They are probably playing and letting other whales know “I’m here”.

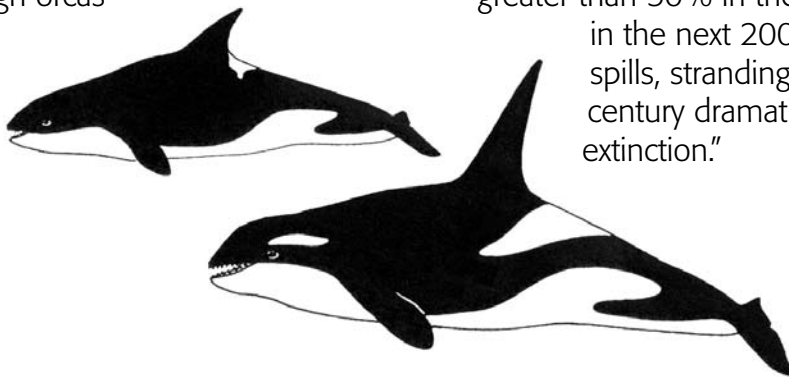
Spyhop: Orcas come up for a look around by poking their heads vertically out of the water.

Tail Lob: Slapping their huge tails (flukes) on the water may be one way they communicate.

The Great Hunters

If you were a resident Puget Sound orca you would eat your favorite food—chinook salmon. You’d need about 200 pounds of salmon every day. For the approximately 86 whales in this area (J, K and L pods) that means they need about 18,000 pounds of salmon per day. Resident orcas live and travel in our local waters because salmon have always been abundant in this region. Both orca whales and people depend on having salmon to eat but today salmon populations in Puget Sound are only 10% of historic numbers.

Unlike our resident orcas, the “transient” orcas who visit Puget Sound stalk and eat seals, porpoises, even whales larger than themselves. This feeding behavior earned orcas the nick name “killer whale”. Although orcas are the ocean’s top predator, there are no recorded unprovoked attacks on humans by orcas in the wild.



Are Our Orcas Healthy?

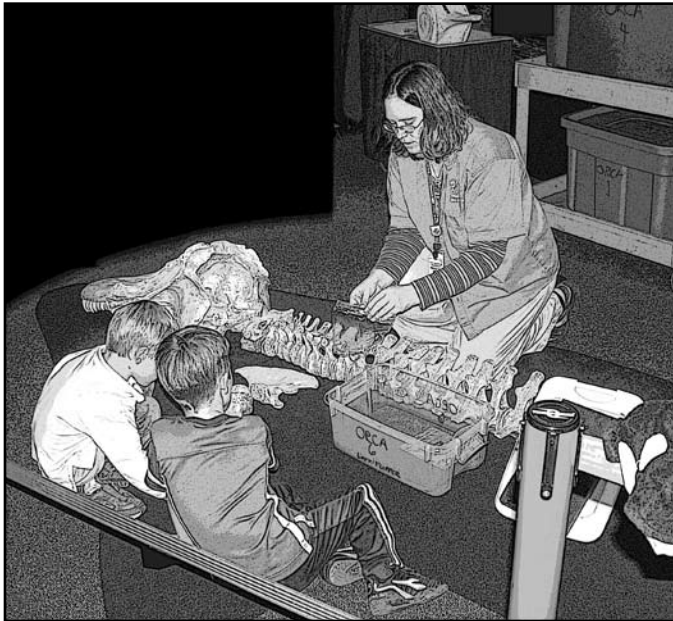
Orcas have the sad distinction of carrying the highest levels of toxins stored in their bodies of any animals in the world. Like humans, orcas are on the top of their food chain. That means they have no predators but it also causes some problems. Salmon, the resident orcas’ favorite food, eat thousands of krill to survive. If each tiny krill is contaminated with a toxin, the salmon store (bioaccumulate) large quantities of toxins in their bodies. Next in the food chain are the orcas who may eat hundreds of salmon each week. Mammal eating orcas eat even higher on the food chain. Toxins such as heavy metals end up stored in the whale’s blubber. The fatty milk of mother whales transfers the toxins to their nursing calves.

What’s Next for Our Endangered Orca Whales?

Human influences on the ocean ecosystem affect whales everywhere. Local orcas were listed as endangered species in 2005. The Center for Biological Diversity recently analyzed our local resident orca population. They say “if current population trends continue, the Puget Sound population will go extinct within 100 years, possibly as soon as 30 years. Even if the birth and death rates are averaged out over the past several decades, the orcas’ risk of extinction is greater than 50% in the next 100 years and 99% in the next 200 years. Just one or two oil spills, strandings or disease outbreaks per century dramatically increased the risk of extinction.”

You Can Help Orca Whales

People and whales both need a clean, safe environment in order to survive and thrive in the Puget Sound region. Our resident whales need an abundant supply of healthy salmon and so do humans. Keeping toxic chemicals out of Puget Sound and preventing oil spills helps keep the food supply safe for orcas and people. We must respect our whales and their environment because it is our environment, too. As powerful and strong as they are, their fate is in our hands.



How We Can Help Puget Sound Orca Whales:

- Protect and help restore salmon habitat.
- Practice natural yard care at home and at school.
- When whale watching in your own boat follow federal whalewatch guidelines. Stay well away from whales and never cross their travel paths. Encourage commercial operators to do the same.
- Help friends and neighbors learn and care about our marine environment by sharing your knowledge with them.
- For more information visit www.seattleaquarium.org/conservation and click on "Help Save Our Orcas"

Seattle Aquarium Curriculum (Grades 1-12)

"Salmon: An Educator's Guide."

"Watersheds: An Educator's Guide."

Email aquarium.programs@seattle.gov or 206.386.4353

Orca Discovery Class

Discover the connection we all have with Puget Sound orca whales in this interactive program in the Aquarium's Family Activity Center. Choose your program: Build a Whale Skeleton (Grades 1–3 & 4–6) or Orca Food Web (Grades 4–6) EALRs 1 & 2: Systems and Inquiry. Reservations required for your school group. Call 206.386.4353.

Orca Trading Cards

Orca trading cards are great learning tools and collector items for your students. Each card has an individual orca photo, name and story. They are available at the Puget Sound Orcas: Family Activity Center for students participating in the Center activities. Cards provided with support from the Seattle Aquarium Society, National Oceanic and Atmospheric Administration (NOAA), and the Center for Whale Research.

References

Wiles, G. J. (2004). Washington State status report for the killer whale. Washington Department of Fish and Wildlife, Olympia.
wdfw.wa.gov/wlm/diversity/soc/status/orca
www.biologicaldiversity.org/swcbd/species/orca/index.html

Orca Study Resource List

Books for Adults

- Orcas in Our Midst*, Howard Garrett, 2005.
Contact info@orcaneetwork.org for copies.
(Focuses on local orcas; highly recommended)
- Killer Whales: The Natural History and Genealogy of Orcinus Orca in British Columbia and Washington State*, John K. B. Ford, Graeme M. Ellis, Kenneth C. Balcomb, University of Washington Press, 2000 (Second edition)
- Orca: Visions of the Killer Whale*, Peter Knudtson, Greystone Books, 1996
- Dolphins and Whales*, (White Star Guides Underwater World) Maurizio Wurtz and Nadia Repetto, 2003

Books for Students

- Whales and Dolphins*, Eye Wonder Series, DK Publishing, 2003
- 100 Things You Should Know About Whales and Dolphins*, Belinda Gallagher and Steve Parker, Miles Kelly Publishing, 2006
- Whales*, (Zoobooks), Creative Education, Inc., 1987
- Whale*, (Eyewitness Books), Alfred A. Knopf, 1993

Story Books

- Stormboy*, Paul Owen Lewis, Tricycle Press, 1995
- Davey's Dream*, Paul Owen Lewis, Tricycle Press, 1988
- Springer's Journey*, Naomi Black, San Juan Publishing, 2006

Online Resources – Adult/Teacher

- Orca Network: www.orcaneetwork.org
- Center for Whale Research:
www.whaleresearch.com
- Whale Museum: www.whalemuseum.org
- Washington State Status Report for the Killer Whale:
wdfw.wa.gov/wlm/diversity/soc/status/orca
- OrcaLab: www.orcalab.org
- Orca Whale Watching Guidelines:
www.whalemuseum.org/programs/soundwatch/soundwatch.html
- Center for Biological Diversity:
www.biologicaldiversity.org/swcbd/species/orca
- American Cetacean Society Teacher Resources:
www.acsonline.org/factpack/index.html
- Seattle Aquarium; How to Help Our Orca Whales:
www.seattleaquarium.org/conservation/orca/OrcaFlyer2.pdf

Online Video Resources – Adult

- www.oceanvoyager.org/episodes/03/

Online Resources – Student

- www.nationalgeographic.com/kids/creature_feature/0105/orcas.html
- <http://library.thinkquest.org/05aug/00547>
- www.enchantedlearning.com/subjects/whales/



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