

Orcas in the Salish Sea

Key Points for Interpretation

- Two kinds of orcas are commonly found in the Salish Sea: Southern residents and Bigg's transients. Although visually similar, these orca ecotypes are separated by many thousands of years of genetic isolation and should always be considered two distinct populations.
- Southern resident orcas have been listed under the Endangered Species Act since 2005. However, their population is continuing to decline due to decreases in food availability, increased contaminant presence, and increased marine noise pollution.
- Transient orcas are the top predators in the Salish Sea, and are therefore key players in maintaining the region's incredible biodiversity.

At PTMSC

Visit the skeleton of Hope - a female transient orca - in our museum and piece together her story using real-world data.

Listen for any number of marine mammals with PTMSC's hydrophone!

Connections

Biomagnification

Salmon

Harbor Seals

Marine Mammal Stranding Network

Marine Ecology (?)

Diving Deeper

[the following is edited text [from the website](#)]

Killer whales, (*Orcinus orca*) commonly called orcas, are found in all the world's oceans, but the best known and most studied populations are those of the Pacific Northwest.

Orcas are highly intelligent predators with complex social interactions. Each population - or "ecotype" - has its own "culture," closely tied to the population's food source, hunting style, and communication. Although all orca ecotypes present in Washington's waters look similar and live in the same areas, they are genetically distinct populations and are not known to interbreed. The Bigg's transient ecotype in particular may have diverged from other orca ecotypes as many as 700,000 years ago!

Two orca ecotypes are known to frequent the Salish Sea: Southern residents and Bigg's transients. (Rarely, a third "offshore" ecotype may also be spotted at the entrance to the Salish Sea.)

Southern Residents

Diet: Fish, mostly salmon (and predominantly Chinook)

Range: Historically, they spend most of the summer and fall season in the Salish Sea, especially around the San Juan Islands. In the winter and spring, they forage more widely, going as far south as Monterey Bay, California and north to southeastern Alaska.

Behaviors: Southern residents travel and hunt in large family groups (called pods). Since salmon are not very sensitive to the sounds orcas make, resident orcas vocalize frequently underwater as they hunt. Residents have a large repertoire of unique, identifiable calls, which can be shared between the three Southern resident pods (J, K, or L) or be specific to one pod. (You can listen to some of these vocalizations [here!](#))

Status: Endangered, listed under the ESA

CURRENT THREATS:

Today, the population of Southern resident orcas is less than half the size we would expect from historical data. Between 1967 and 1971, live capture for large aquariums initially depleted the Southern resident population, and their numbers have never recovered. Today, we know that the main threat facing Southern resident orcas is lack of food. Food stress exacerbates the effects of the other challenges these whales face in our waters.

Declining food resources

The salmon populations that Southern residents rely on are also severely depleted - and many are listed under the Endangered Species Act, themselves. Without recovery of key salmon runs within the Southern resident range, these orcas will continue to struggle to nourish themselves appropriately. Malnutrition is at the core of the Southern resident's decline.

Contaminants

Bigg's Transients

Diet: marine mammals

Range: Alaska to Northern California

Behaviors: Bigg's transients travel and hunt in small pods, typically 2-6 individuals. These small groups are usually based on a female and her offspring, but often change as animals mature and disperse. While searching for prey, Bigg's transients almost never breach or splash. Instead, they will swim silently underwater for long periods. Since the mammals they feed on are able to hear their vocalizations, transients must rely on stealth and surprise to sneak up on their prey. They do have recognizable calls when they vocalize, but less is known about call sharing among transient pods.

Status: With stabilization of prey populations in the Salish Sea (harbor seals, especially), the population of Bigg's transient orcas is increasing.

Both transient and resident orcas are impacted by *biomagnification*, a process by which contaminants concentrate in animals higher in the food chain. Persistent organic pollutants (including PCBs and DDT) that have not been in use in the United States for decades are still turning up in especially high concentrations in orcas. These contaminants isolate in an animal's fatty tissues, where they can affect the animal's reproductive and immune system.

Noise pollution

Orcas spend substantial periods of time in the heavily-traveled waters of the Salish Sea. In addition to disturbance and occasional injuries from boat strikes, they face ever-increasing noise from boat traffic: small motorboats, regular ferry crossings, large freighters, and cruise ships. Excessive vessel noise may affect their ability to echolocate, find food, and communicate with one another. Orcas have to expend more energy to communicate in noisy environments, which might otherwise be used for hunting or traveling.

Deepwater Links

[PTMSC's Orca Project \(The Story of CA189\)](#): *Learn the story of PTMSC's orca skeleton: the details of her stranding, the volunteer-led effort to put her back together, and what we think might have happened to her.*

[Hostile Waters: Orcas in Peril](#): *The Seattle Times's special report on the Southern residents. Learn more about factors leading to their decline, the implications of their decline to the rest of the West Coast ecosystem, and what we can do to help.*

[Listening for Orcas](#): *Explore the Salish Sea hydrophone network, and learn about how orcas rely on sound to interpret their environment. Listen to a library of Southern resident signature calls and other marine soundscapes - then challenge yourself to listen for whales on the hydrophone network's livestream!*