Biology A · Unit 1 · Level 2 (modified)

Orcas & the Salish Sea



TODAY'S PLAN

- 🐋 Southern Residents
- 🕸️ Salish Sea food web
- ☠️ Biomagnification
- 📣 Ocean noise
- 💚 Solutions

Review · 5 minutes

Quick Review



🧪 A **hypothesis** is a testable guess.

🐋 Essential question: Why did orca **J32** die, and why aren't the Southern Residents recovering?

❓ What is your hypothesis?

Words to Know

Words to Know



Orca

Killer whale. A top predator that lives in family groups called pods.



Salmon

Southern Resident orcas eat mostly Chinook salmon.



Salish Sea

The sea between Washington and British Columbia, home of the Southern Residents.



Pod

A group of orca families that travel together. Southern Residents have J, K, and L pods.

Words to Know

More Words to Know



🕸️ **Food web**: All the food chains in a place, linked together. Arrows show energy moving.

🌿 **Phytoplankton**: Tiny algae that make food from sunlight. The base of the food web.

☠️ **Toxin**: A harmful chemical. PCBs are toxins found in orcas.

📈 **Biomagnification**: Toxins get more concentrated at each step up a food chain.

Learn

Southern Resident Killer Whales

🐋 The **SRKW** live in the Salish Sea. There are **J, K, and L pods**, fewer than 80 whales.

🐟 Residents eat mostly **Chinook salmon**. Transient (Bigg's) orcas eat seals.



Learn

Orca Families



Matriline
a mother and her young



Pod
related families

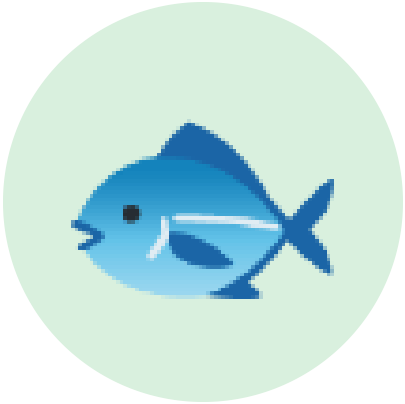


Clan
pods that share calls



Community
all the Southern Residents

🃏 Check 1 of 3



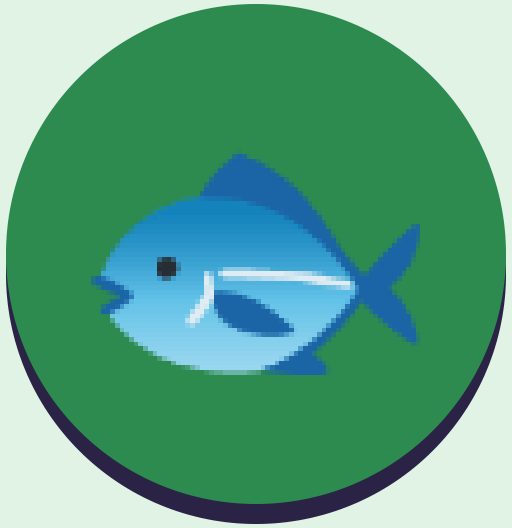
Southern Resident orcas mostly eat…

Hold up 1, 2, or 3:

1️⃣ Seals

2️⃣ Chinook salmon

3️⃣ Krill



Chinook salmon

Transients eat seals; Residents eat Chinook.

Learn

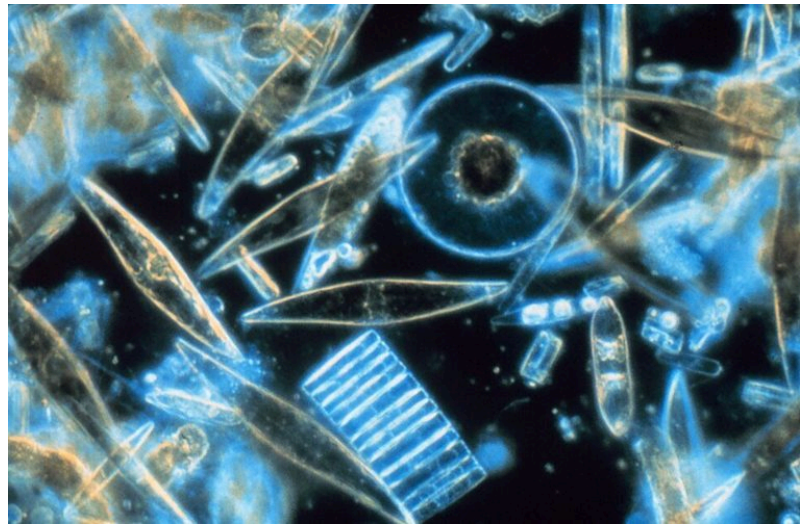
Salish Sea Food Web

🌿 **Phytoplankton** (producers) make food from sunlight.

🦐 **Zooplankton** (primary consumers) eat them.

🐟 Herring → 🐟 salmon → 🐋 orca (top consumer).

➡️ Arrows show the flow of **energy**.



🃏 Check 2 of 3



Which is a producer?

Hold up 1, 2, or 3:

1️⃣ Zooplankton

2️⃣ Salmon

3️⃣ Phytoplankton

✅ Answer · Card 2 of 3



Phytoplankton

Producers make their own food with sunlight.

Learn

Biomagnification



☠️ **PCBs** are toxins that are **fat-soluble**: they stay in fat (blubber).

📈 Each level eats many of the level below, so toxins get **more concentrated** up the chain.

🐋 Orcas are at the top, so they carry the most.

🃏 Check 3 of 3



PCBs build up in orcas because they are…

Hold up 1, 2, or 3:

1️⃣ Fat-soluble and passed up the food chain

2️⃣ Made by orcas

3️⃣ Washed out by water

✅ Answer · Card 3 of 3



Fat-soluble and passed up the food chain

They stay in blubber and pile up.

Learn

Ocean Noise



📣 Orcas use **echolocation**: clicks bounce off fish and echo back.

🚤 **Boat noise** covers the echoes, so hunting takes more energy.

📉 Less food means orcas burn **blubber**, which releases stored PCBs.

Learn

J32: Three Threats Together



🐟 **Lack of food** + ☠️ **toxins** + 🚤 **noise** worked together.

🤰 J32 was carrying a calf. Her death was a big loss for the pods.

Learn

Solutions



Restore salmon

remove dams, like the Elwha



Slow ships

Port of Vancouver slowdown



Clean up PCBs

keep toxins out of drains



Plant trees

shade rivers for salmon

Wrap-Up

Recap



SRKW
J, K, L pods



Food web
energy flows up



Biomagnification
toxins concentrate



Noise
blocks echolocation

Wrap-Up

Exit Ticket



1️⃣ **Name the 3 threats to the Southern Residents.**

2️⃣ **Explain biomagnification in one sentence.**

3️⃣ **Give one solution.**