GENTLY DOWN THE SEYMOUR

Seymour Salmonid Society

Primary Resource



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Station A: Hatchery Tour

Learning Outcome:

Students will develop a basic understanding of how hatcheries support salmon populations by providing a protected environment for growth and survival. Through observing different life stages, feeding practices, and habitat features, students will learn how salmon are raised, cared for, and prepared for release into the wild.

Before You Go:

Students should know the life cycle of the Coho salmon. Review the reasons for the decline of salmon and why hatcheries were built.

During the Tour students will:

- Explore where salmon live using maps of the watershed.
- Learn to identify different salmon species.
- Observe salmon life stages from eggs to smolt.
- See how hatcheries raise and protect young salmon.
- Discuss how human activities impact salmon and how we can help.







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Helping Salmon

Why Are There Fewer Salmon?

Scientists and communities believe there are fewer salmon because of human and environmental changes:

- People have caught too many salmon
- The ocean is warmer and has less food
- Rivers and streams have been changed by pollution, dams, roads, and buildings, making it harder for salmon to travel and survive.

How Can We Help Salmon?

Salmon need healthy habitats to survive. We can help by:

- Protecting rivers, streams, and ocean habitats
- Being careful where we build roads, homes, and factories
- Keeping trees and vegetation along stream banks
- Limiting how many fish are caught

The Seymour River:

The Seymour River was dammed to provide drinking water for the City of Vancouver. While this is important for people, the dam changed salmon habitat by:

- Blocking access to spawning areas upstream
- Reducing water flow downstream, limiting habitat for salmon

How Do Hatcheries Help Salmon?

Hatcheries support salmon populations by increasing survival during the most vulnerable life stages. At the hatchery, students learn that:

- Eggs and alevin are protected from predators and poor water conditions
- Fry are raised in clean, controlled environments and fed regularly
- Salmon are cared for until they are strong enough to migrate to the ocean

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Seymour River Hatchery

Capturing Adult Spawners

Adult Coho salmon returning to spawn are caught with a big net in the river.

Incubating the Eggs

The eggs in the females are removed and fertilized with milt (sperm) from the males. The fertilized eggs are kept in trays. This is called incubation. There is always water flowing through the trays bringing oxygen to the eggs.

Feeding the Fry

To help the fry grow quickly, they are fed many times a day (up to 10 or 15 times!)

In the Ponds

When the fry are bigger, they are marked (fin clipped) to identify them as hatchery fish. Then they are moved to outdoor ponds and fed until they are ready to leave for the ocean (smolting). Nets and fences protect them from herons, mink, otters, and other hungry predators.

Releasing the Smolts

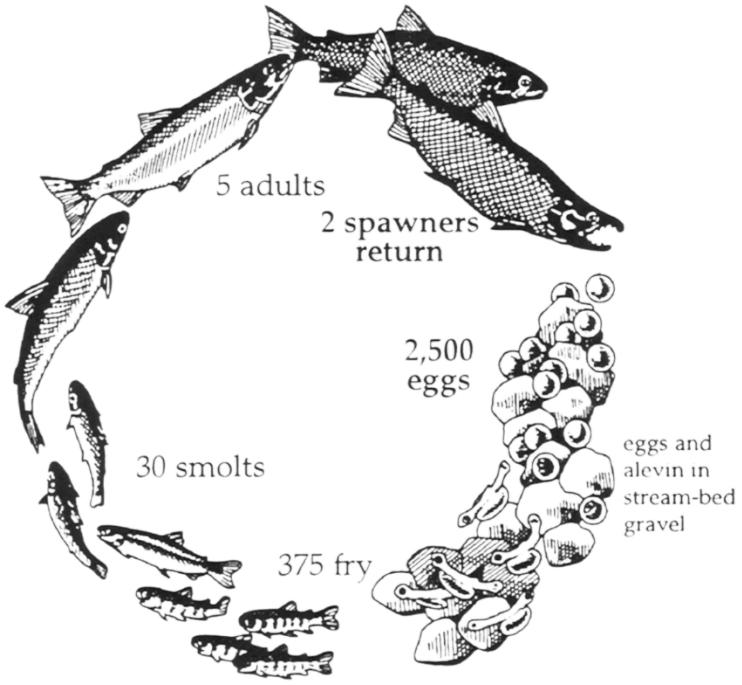
When the salmon smolts are ready for the ocean they are released into the river. Now the hatchery fish join the wild fish on their migration through the ocean.



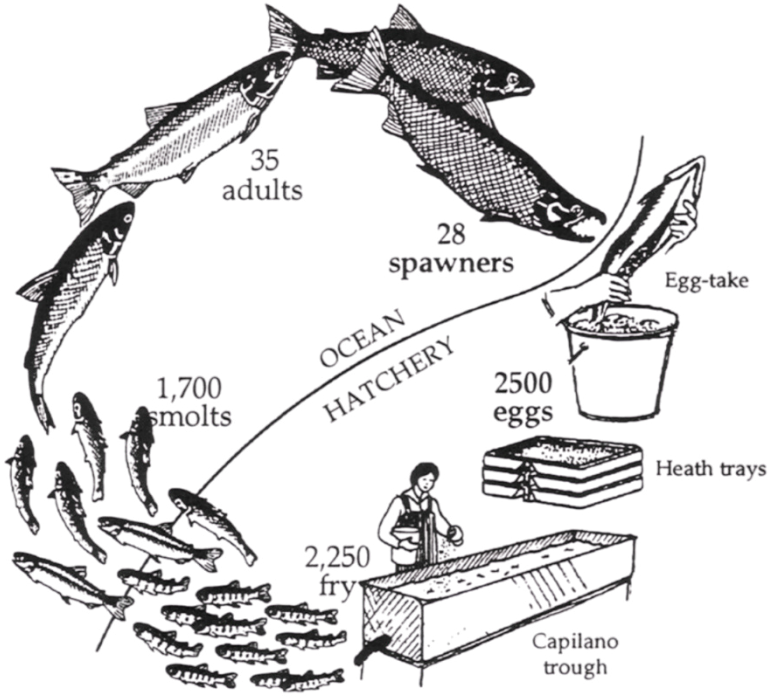
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Salmon Life Cycle

In nature, about 2 Coho survive to be spawners for every 2,500 eggs spawned.



When the natural life cycle is disturbed, some Coho may be raised in a hatchery, where more fry survive to one day travel to the ocean.



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Review & Resources – Student Worksheet

What are some of the ways we can help salmon?

What are some of the ways hatcheries can help salmon?



spawning male Chum salmon

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Station B: Aquatic Invertebrates

Learning Outcome:

To share the importance of aquatic invertebrates as food for fry and as part of a stream food chain. To identify aquatic invertebrates and learn how they indicate stream health.

Before You Go:

Students should know the lifecycle of aquatic invertebrates and their importance as a food source.

During this Station students will:

- Learn what aquatic invertebrates are and their link to salmon.
- Collect invertebrates from the stream using samplers and brushes.
- Examine and identify invertebrates using microscopes and keys.
- Infer water quality and creek health.







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Aquatic Invertebrates

Snacks For Fry:

Salmon fry eat small animals called aquatic invertebrates that live in streams. These invertebrates spend all or part of their lives in water and don't have a backbone. Most have gills, like fish, so they can breathe underwater.

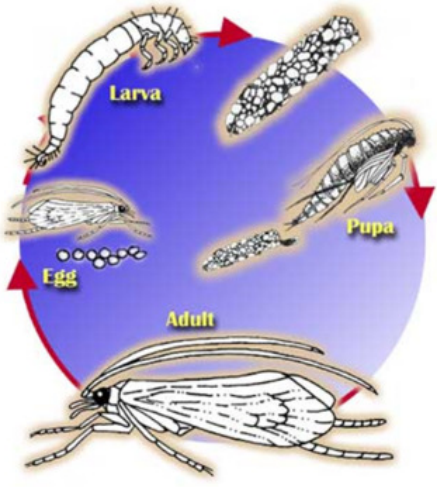
Salmon fry eat aquatic invertebrates that drift by in the water current. They will also leap out of the stream to catch adult insects flying above the water. Sometimes, invertebrates fall into the water from trees and bushes along the stream bank, and salmon eat those too!

Most aquatic invertebrates spend the winter and spring underwater. While they are in the water, they are called nymphs or larvae. By summer, many are ready to leave the stream. They swim to the surface, crawl onto rocks, stream banks, or tree trunks, shed their old skins, and emerge as winged adults.

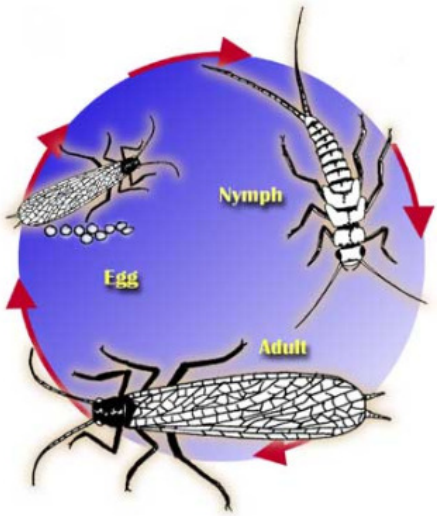
Invertebrates like mayflies or mosquitoes usually spend only a short time as adults, just long enough to find a mate. After mating, females lay eggs in the stream, starting a new life cycle.

Where Can You Find Aquatic Invertebrates?

Aquatic invertebrates live in streams, rivers, and pools. You can find them buried in mud, crawling under rotting leaves, hiding under rocks, or tucked into cracks in logs.



Life Cycle of a Caddisfly



Life Cycle of a Stonefly

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Water Quality Clues

An identification guide to aquatic invertebrates and their sensitivity to pollution.

Pollution Intolerant



Stonefly Nymph



Mayfly Nymph



Caddisfly Larva



Riffle Beetle Larva

Somewhat Intolerant



Scud



Planaria



Aquatic Beetle



Aquatic Sow Bug



Cranefly Larva



Damselfly Larva



Dragonfly Larva

Pollution Tolerant



Blackfly Larva



Leech



Water Mite



Midge Larva



Aquatic Worm

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Station C: Stream Survey

Learning Outcome:

Students will learn about stream habitats and water quality requirements for salmon in a stream.

Before You Go:

Have students review stream survey terminology.

During this Station students will:

- Review habitat needs: food, water, shelter, space.
- Use tools such as a stopwatch, depth sticks, tape measure, worksheets…
- Complete a Stream Survey worksheet as a group.
- Measure, observe, record, and use webbing loops to show redd space.
- Conclude if Hurry Creek is suitable for different salmonid species.





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Healthy Habitat

Salmon need special places to live in to be healthy. Students should know these characteristics.

1. **Clean Water:** Salmon need clean water to survive. Pollution such as garbage, animal manure, or chemicals like detergents and oil harms salmon.
2. **Cold Water:** Salmon are the same temperature as the water. They need cold water (3–13°C) to stay healthy.
3. **Varied Water Depths:** Salmon need deep pools to rest and hide from predators and shallow areas for laying eggs.
4. **Plants & Trees:** Vegetation along streams provides shade, keeping water cool for salmon.
5. **Hiding Places:** Salmon need protection from predators (birds, otters, mink, large fish). Good hiding spots include under logs, behind rocks, and under stream banks.
6. **Stream Bottom:** The stream bed should have gravel and rocks, not too much sand. Gravel allows salmon eggs and alevin to breathe, and rocks provide shelter.

Stream Survey – Student Worksheet

1. Is the water **clean**? Can you see:
   ❑ Plastic & Garbage ❑ Chemicals ❑ Sewers
2. The water **temperature** is _____ °Celsius.
3. How **deep** is the water?

   The water is _____ centimeters in a **deep** place.

   The water is _____ centimeters in a **shallow** place.
4. How **wide** is the stream?
   The stream is _____ centimeters wide.
5. Is there **shade** along the stream bank for the fish? Can you see:
   ❑ Plants ❑ Trees ❑ Bushes
6. Are there places for the fish to **hide**? Can you see:
   ❑ Logs ❑ Big Rocks ❑ Shady Places
7. What does the stream bottom look like? Can you see:
   ❑ Gravel ❑ Cobble ❑ Sand
8. Is this stream a good home for salmon?
   ❑ Yes ❑ No



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A Good Home – Student Worksheet

Use the stream survey results to complete this chart.

SALMON NEED	A GOOD HOME	HURRY CREEK IS A GOOD HOME
CLEAN WATER	A good home has no pollution from: • Plastic & garbage • Chemicals • Sewers	❑ Yes ❑ No
WATER TEMPERATURE	A good home has temperatures between 3°C - 13°C.	❑ Yes ❑ No
WATER DEPTH	A good home has deep pools and shallow water.	❑ Yes ❑ No
SHADE	A good home has: • Plants • Trees • Bushes	❑ Yes ❑ No
PLACES TO HIDE	A good home has: • Logs • Rocks • Dark hiding places	❑ Yes ❑ No
STREAM BOTTOM	A good home has: • Gravel • Big Rocks	❑ Yes ❑ No
	Totals	☐ ☐

If you have checked Yes more times than No, you have found a good habitat for salmon.

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Additional Resources

Pre-Visit Introductory Activity

- I Notice, I Wonder, It Reminds Me Of… from the Beetles Project
    - We encourage reviewing the entire document, however, the field card starting on page 20 is a good summary of how to run this activity. This is an excellent strategy for honing student' observation skills. It can be used outside, with photographs or videos.

Station A: Hatchery Tour

- Salmon Anatomy and Dissection by Pacific Salmon Foundation
- Salmon Life Cycle Vocabulary by Pacific Salmon Foundation

Station B: Aquatic Invertebrates

- Watch Mayfly nymphs hatch instantly from Stroud Water Research Center
- Aquatic Macroinvertebrates in Motion by Stroud Water Research Centre
- Teacher read: Strange Beginnings by Karen Needham
- Stream Side Science lesson plans from Utah State University

Station C: Stream Survey

- Stormwater Activity Booklet from Utah State University
- Homemade Water Purifier – connects to gill activity. From Utah State University

General Post Visit Summary Activities

- Pacific Salmon Foundation Salmon School
- Road Salt and Salmon Project Stream Scientist Kits