**Grade Level:**
3rd and 4th

**Time:**
110 minutes

**Season:**
All

**Objectives:**
Students will be able to...

- Name the life cycle stages
- Describe a fact about one or more life stages

**Key Concept:**
- Salmon grow, change and reproduce in predictable cycles
- Life stages occur in a specific order

# Salmon Life Cycle

Lesson 1 of 1

## Background & Summary

Students investigate the life cycle stages of salmon. First, they examine preserved specimen and images of developmental stages. The introductory activity invites students to write down and share their observations in a small group. Depending on grade level and curriculum requirements, students may describe gross physiological characteristics, recall prior knowledge, or identify specific life stages. Diagrams, hands-on displays and images provide context for reinforcing key concepts. The extension activities offer more opportunities for group discussions about life cycles, in general.

Students expand their knowledge of the salmon life cycle by researching facts about an assigned life stage, working in a group to create an infographic poster and presenting their poster to the class.

The "Life Stage Cheat Sheet" is an instructor resource that lists facts about each life stage. Some student groups may struggle with staying on task or making progress when researching life stage facts. Instructors can modify the lesson by helping students brainstorm three to five life stage specific questions, and then directing students to use the answers to those questions as their facts. If time is an issue, it may be helpful to guide students towards asking questions that you (the instructor) know the answer to or are addressed on the cheat sheet.

## Procedure

### Introduction: Writing Prompt

**1.** Split students into 6 groups and provide each group with 1-2 magnifying glasses, a "Life Cycle Display" and "Life Cycle Images". Encourage the students to observe and examine the preserved specimen in the display and cutout images. Direct students to record their observations using words or illustrations. (10 minutes)

**2.** (Option A – One instructor) As students are continuing to write, go around to each group and facilitate a discussion about the cutouts or display. Encourage students to share their thoughts and observations about the specimen and images in front of them. If there isn't an active discussion occurring at the table already, then pick from one of the questions below. (18 minutes, 2-3 minutes per group)

# Procedure (Continued)

- How many stages do you see? What are the names of the stages?

- What order should the cutouts be in? Why?

- What do you notice about each specimen/cutout?

- What do the specimen or images in the cutouts have in common? How are they different?

(Option B – Multiple instructors) Divide the six groups between the instructors and engage with each student group as described in Option A.

**3.** Allow 4-6 students share their observations with the class. (5 minutes)

## Pacific Salmon Life Cycle

Learning Objectives:
a. Salmon Life Cycle has 6 stages
b. Salmon are anadromous

**4.** Use the "Labeled Life Cycle Images" to walk the class through the order and names of the stages. (10 minutes)

Key messages to share with students:

*A life cycle is a series of stages an animal passes through over the course of their lifetime.*

*The displays and images show different stages of the Pacific Salmon*

*The salmon life cycles has 6 stages: Egg (Stage 1), Alevin (Stage 2), Fry (Stage 3), Smolt (Stage 4), Ocean Adult (Stage 5), Spawning Adult (Stage 6)*

**5.** Pass out two "Life Cycle Diagrams" to each group. Encourage students to work in pairs to complete the diagram using the pieces (life cycle stages) provided. (10 minutes)'

**6.** Bring class back together and review the correct order. Allow students to lead review by asking them as a class where each piece should be placed. (5 minutes)

Key message to share with students:

*Salmon are anadromous. This means the adults, who are born in freshwater, migrate to the ocean where they grow and mature. When they are ready to spawn (or reproduce) they return from the ocean to the freshwater streams they were born in.*

## Life Stage Infographic Activity

Learning Objectives:
a. Each stage of the salmon lifecycle have unique physical and ecological characteristics
b. Physical and ecological characteristics associated with each life stage can vary between species

**7.** Explain that each group will be assigned a life cycle stage, and they will work together to make an informational poster. Groups are free to decide how they design their poster. Each poster should include **at least** one drawing or illustration and three to five facts. Provide each group with markers, colored pencils and a 20" x 23" Post-it. Encourage student to use the "Life Cycle Displays" and "Pacific Salmon Images" as visual references (45 minutes)

(Option A) – Students use school supplied laptops to research three to five facts about their assigned life stage.

# Procedure (Continued)

(Option B) – Students complete the "Life Stage Student Worksheet" in advance of the lesson. Students will pick three to five facts from the information they gathered to include on the poster.

(Option C) – Pass out 2-3 "Salmon Facts Cards" to each group. There are cards for each life stage.

The "Life Stage Cheat Sheet" is an instructor resource that can be used to answer questions that students may have.

**8.** Groups share their posters with the class. Starting with the first stage, direct each group to recall the name of their stage, describe their drawing and share one interesting fact. For longer class periods, Students can spend more time presenting their work to the class. (12 minutes, minimum)

**9.** Wrap up the lesson with a journal prompt. (5 minutes)
-What are the stages of the salmon life cycle?
-Recall a fact about any two of the six salmon life stages.

## Extensions

### Additional Journal or Discussion Prompts

**Life Cycle (In general)**
The following questions can be used during the introductory activity to encourage a class discussion or journal entry:
-How would you describe a life cycle?
-What images come to mind, besides salmon?
-Which animals have life cycles? What are the names of each stage?

### Alternative Activities

**Life Stage Infographic**
Instead of each group making an infographic of a single life stage, direct groups to make an infographic about the entire life cycle. Depending on the grade level, groups can provide life cycle facts specific to different salmon species.

### Additional Activities

**Salmon Survival Board Game**
The goal of this dice game is for salmon eggs to hatch and make their way through the entire salmon life cycle. This activity is included in the supplemental material for this lesson plan.

**Salmon Survival Worksheets**
Students calculate salmon survival rates at different life stages. This activity is included in the supplemental material for this lesson plan

# Vocabulary

**Alevin:** A recently hatched fish that is still attached to the yolk sac.

## Vocabulary (Continued)

**Anadromous:** An aquatic species that is born in freshwater and migrates to the ocean to mature before return to freshwater to reproduce (spawn)

**Estuary:** Bodies of water where rivers meet the sea.

**Fry:** A juvenile fish that no longer has a yolk sac. Fry are able to move around and swim well enough to leave the redd and feed itself.

**Habitat:** The natural home or environment of a plant, animal, or other organism.

**Migration:** The movement from one place to another, and in many cases, back again.

**Natal Stream:** The stream where a fish a born

**Parr:** A young salmon, older than a fry, that actively lives and feeds in freshwater.

**Redd:** A depression made in the gravel of a riverbed where a female salmon lays her eggs

**Smolt:** A juvenile salmon that is ready to migrate from freshwater to the ocean.

**Spawn:** The process of fish reproduction, fish deposit eggs or release sperm to fertilize eggs.

**Spawning Ground:** A place where fish lay their eggs for fertilization.

## Materials

**Included:** You can request to borrow laminated versions of diagrams, images and cards
12 sets - Life Cycle Diagrams
6 sets – Life Cycle Images
1 set - Labeled Life Cycle Images
1 set - "Salmon Facts" cards
1 - Life stage cheat sheet

# Materials (Continued)

(Optional) Life Stage Student Worksheet for each student
(Optional) Salmon Survival Board Game – See Extension section
(Optional) Salmon Survival Worksheet – See Extension section

### Request to Borrow from Columbia River FWCO:

Note: Requests are pending availability and geographical location
6 sets - Life Cycle Displays
6 – Magnifying glass

### Not Included:

Pencils and Paper (Loose Leaf, Notebook or Journal)
6 sets – Markers and/or color pencils
6 to 12 computers connected to WiFi (1-2 for each group)
6 - 25" x 30" Post-It Notes (or any paper to make a poster)

# Next Generation Science Standards

## Life Science

**LS1 – From Molecules to Organisms: Structures and Processes**
3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles, but all have in common birth, growth, reproduction, and death.

# Common Core Standards

## English Language Arts

**Reading: Informational Texts**
CCSS.ELA-LITERACY.RI.3.7: Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

**Speaking and Listening**
CCSS.ELA-LITERACY.SL.3.1 and 4.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.3.3: Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.

# Common Core Standards (Continued)

CCSS.ELA-LITERACY.SL.3.4: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.3.6: Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

CCSS.ELA-LITERACY.SL.4.4: Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS.ELA-LITERACY.SL.4.6: Differentiate between contexts that call for formal English (e.g., presenting ideas) and situations where informal discourse is appropriate (e.g., small-group discussion); use formal English when appropriate to task and situation. (See grade 4 Language standards 1 here for specific expectations.)