



## **LESSON ONE-ACTIVITY THREE: Life Cycle of Alaska's Salmon**

**Content Objectives:** The students will learn the various stages of the life cycle of a Pacific salmon. The students will explore websites about the life cycle of the Pacific salmon and discuss the balance, fairness and credibility of various internet sources. The students will write an expository paper on the life cycle of pacific salmon and do a presentation, based on their research, for junior high and/or elementary students.

**Key Vocabulary:** adaptability, disturbance, siltation, urbanization, watershed, upland areas, headwaters, riparian zone, wetlands, estuaries, erosion, incubate, alevin, accumulated thermal units, fry, emergence, smolt, nymph, larva, brackish, imprinting, plankton, thermal pollution, olfaction,

redd, resorbed, decomposition, hatchery, credibility, controversial, expository, rubric, mortality factors, limiting factors

**Supplementary Materials:** Life Cycle Posters, Egg to Fry Model, Salmon Odyssey CD, graph paper, art supplies, Life Cycle Expository Paper Rubric, Notetaking Guidelines worksheet, student fisheries notebook/binder, The Streamkeepers Handbook-Stream to Sea Program from the Federal Department of Fisheries and Oceans Canada, Salmonids in the Classroom Intermediate-Federal Department of Fisheries and Oceans Canada

**Resources:** ADFG-Alaska Department of Fish and Game, USFWS-United States Fish and Wildlife Service, 4-H Fisheries, Pacific Salmon Foundation

**Books:** Alaska's Wild Salmon ADFG, Fish and Fisheries Alaska Sea Week, Project Wild Aquatic

**Children's Literature:**

Sammy Goes Home by Chris Jenness

First Salmon by Roxanne Beauclair Salonen and illustrated by Jim Fowler

River of Life by Debbie S. Miller and illustrated by Jon Van Zyle

Salmon Creek by Annette LeBox and Karen Reczuch

Salmon Summer by Bruce McMillan

Adventures of Riley: Survival of the Salmon by Amanda Lumry and Laura Hurwitz

**Website Wandering:**

1. [http://www.krisweb.com/aqualife/lifecycle\\_early.htm](http://www.krisweb.com/aqualife/lifecycle_early.htm)
2. <http://www.streamnet.org/pub-ed.html>
3. <http://www.fishex.com/seafood/salmon/salmon-life-cycles.html>
4. <http://www.vanaqua.org/salmontales/english/learningcentre/humanimpact.php>
5. <http://alaska.fws.gov/cybersalmon/index.htm> (related site)

**Activity Sequence:**

**Part One-Introduction to the Life Cycle of a Salmon**

Have students read from Alaska's Wild Salmon ADFG (pages 14-19).

Discuss again with students how the adaptability of salmon, touched on in Activity Two, has allowed them to face the challenges they encounter as they go through their life cycle.

Extension: Read aloud to students the book Salmon Creek by Annette LeBox and Karen Reczuch

OR have the students perform the play “A Tale of Two Sockeye” found in the Fish in the Floodlights book (pages 107-111).

### **Part Three-Limiting Factors**

Have students do the outdoor activity in Project Wild Aquatic called Turtle Hurdles (pages 158-162).

### **Part Two-Salmon Habitat**

Have students read from Alaska’s Wild Salmon ADFG (pages 20-28). Discuss with students the importance of habitat to the survival of Alaska’s wild salmon. Remind them of the discussion you had about how salmon’s adaptations help them survive and how these adaptations carry a “hidden price”. Why does their habitat require such a “delicate balance”? This is a good opportunity to cover the vocabulary that pertains to habitat.

### **Part Three-Expository Notetaking and Website Sources**

During this part of the lesson the students will be exploring different website sources while learning more about the life cycle of the Pacific salmon.

While they explore the listed websites they will be asked to take notes on the six stages of the life cycle of the salmon using their notebooks and the Life Cycle Expository Paper Rubric provided. They should use the Vital Vocabulary listed in the rubric as a guide while taking their notes on the various stages of the life cycle.

Go over the Guidelines for Notetaking before they start. Be sure to emphasize that they will be expected to take notes in their own words.

**NOTE:** Although it may seem redundant to look at so many websites about the same topic, the purpose is for the student to explore and gain a working knowledge of the salmon’s life cycle while being exposed to various website sources. The hope is that during the process they will get a feel for the different information available on the web, inquire about the credibility of the source and consider the reason for the various websites offering the information to the general public in the first place. This will be important later in the unit when the students will be doing their own research and will need to consider where the information they’re using is coming from.

Extension: Have the students do the activity in Project Wild called Facts and Falshoods. The objectives of the activity are to develop criteria for evaluating the quality, balance and fairness of presentations and to evaluate the balance and fairness of presentations designed to represent specific points of view about an environmental topic. These will be necessary tools when the student is doing their own research later in the unit.

Website 1: Explore as a class the first listed website for more information on the life cycle of the Pacific salmon. (Discuss what you want them to be looking for and thinking about during the process of exploration. You should also model some notetaking on the board or overhead.) Make sure you look at the sections at the end of each description (early stage, adult and spawning) that list some of the challenges salmon face during different stages of their life. This ties into their previous discussion on adaptability.

This might be a good time to discuss the similarities and differences of what impacts Alaskan salmon face compared to the examples on the website (IE: the impacts of livestock on streams.)

Discussion Questions: What is KRIS and is this source feasible as research for an expository report? Why or why not?

Allow students time for independent research on this website.

Website 2: Explore as a class the second listed website. This Streamnet website is interactive and shows photographs of the different stages of the life cycle.

Discussion Questions: What is Streamnet and why would they offer an interactive website on the life cycle of a salmon? Are they a credible source? Why or why not?

Allow students time for independent research on this website.

Website 3: The third website from Fisherman's Express may be a good opportunity to open discussion on what the motivation might be for a company to share information on the life cycle of salmon. Note that the company sells "All Wild and Natural!" salmon.

Discussion Questions: How might sharing the life cycle of Pacific salmon with their customers benefit Fisherman's Express as a company? Who might their target audience be?

Allow students time for independent research on this website.

Website 4: The fourth listed website is from The Vancouver Aquarium and contains a Salmon Countdown activity that is a good summary of the life cycle of Pacific salmon.

Discussion Questions: What would be the target audience of an aquarium? How would their target audience differ from the target audience of Fishermen's Express?

Allow students time for independent research on this website.

### **Part Four-Expository Paper on the Life Cycle of Salmon**

Now that the students have a working knowledge of the life cycle of a salmon and some good notes, they will be asked to write an expository paper on the subject.

Go over the first page of the Expository Rubric again and talk about what makes a paper expository.

Next, go over the second page on Vital Vocabulary again. The students should use the words listed to write an informative description of each stage of the life cycle using this vocabulary. Remind them that they need to use their own words when writing. This shouldn't be a problem if they took notes correctly.

Before they begin you might want to have them do the Combining Sentences activity provided for practice.

### **Part Five-Life Cycle Timeline Graph**

Have the students create a bar graph showing the timeline of the life cycles of each species of Pacific salmon starting at the egg stage. Each stage should be color-coded and show in months how long the different salmon spend in each stage. Students may need to do some research, but can start with the information in Alaska's Wild Salmon on page 17. There is also a great timeline example at the back of the book Salmon Creek by

Annette LeBox and Karen Reczuch.

### **Part Six-Presentations**

Have the students break into groups and make a presentation to a junior high or elementary class using their expository experience. Have them create posters of the six stages of the life cycle of a salmon to accompany their presentations. Discuss how they would present their expository information differently to younger audiences?

Extension: If time allows have them plan a Saturday Salmon Festival for the younger students and community members. It could include their presentations, a poster size version of the life cycle timeline graph, a salmon dissection, expert speakers, games (Hooks and Ladders, Project Wild), art activities (fish printing), puppet shows, read alouds, guided imagery, skits, raffles, charades, a feast or potlatch, demonstrations, etc. (The Salmonids in the Classroom curriculum is a great resource for primary school age students. Also, the fifth listed website: Fish and Wildlife Service's Cyber Salmon)

**Wrap-up Discussion:** Talk more about the motivation and/or target audiences behind websites. Brainstorm a list of reasons why websites are created. Non-fisheries websites could also be used as examples. (Controversial issues make for good discussion on website credibility and bias.)

#### **SIOP FEATURES:**

##### **Preparation**

- Adaptation of Content
- Links to Background
- Links to Past Learning
- Strategies incorporated

##### **Scaffolding**

- Modeling
- Guided practice
- Independent practice
- Comprehensible input

##### **Grouping Options**

- Whole class
- Small groups
- Partners
- Independent

##### **Integration of Processes**

- Reading
- Writing
- Speaking
- Listening

##### **Application**

- Hands-on
- Meaningful
- Linked to objectives
- Promotes engagement

##### **Assessment**

- Individual
- Group
- Written
- Oral