

# Salmon Countdown

## Salmon Life-Cycle Discussion and Worksheet

### KNOWLEDGE

- Learn about the life cycle of Pacific Salmon
- Gain an appreciation of the needs of these organisms in their efforts to survive
- Identify some of the dangers that Pacific salmon face in different life cycle stages
- Explore the effects that humans can have on salmon, in particular, and on ecosystems in general
- Explore the impact that salmon have on aquatic and terrestrial ecosystems

### ACTIVE

- Students participate in a classroom discussion
- Students work as teams to fill out a worksheet

TIME	GROUP SIZE	LOCATION	GRADE LEVEL	EQUIPMENT
3-4 hours	3-4	Classroom	4-7	Large paper or whiteboard Salmon countdown worksheets Photos/videos/props of the salmon life cycle
DEBRIEF/REFLECTIVE COMPONENT			HELPFUL TIPS	
<ul style="list-style-type: none"> <li>• What challenges do salmon face at different stages of their life cycle?</li> <li>• What are some of the ways that our actions impact salmon, and their ecosystems?</li> <li>• What can we do to help protect salmon and the ecosystem?</li> <li>• How do salmon support/affect terrestrial life?</li> </ul>			<ul style="list-style-type: none"> <li>• Activity can be shortened if discussions about salmon and their life cycles have already taken place</li> </ul>	

## OCEAN LITERACY PRINCIPLES

1– The Earth has one big ocean with many features.

- e. Most of Earth's water (97%) is in the ocean. Seawater has unique properties. It is salty, its freezing point is slightly lower than fresh water, its density is slightly higher, its electrical conductivity is much higher, and it is slightly basic. Balance of pH is vital for the health of marine ecosystems, and important in controlling the rate at which the ocean will absorb and buffer changes in atmospheric carbon dioxide.
- g. The ocean is connected to major lakes, watersheds, and waterways because all major watersheds on Earth drain to the ocean. Rivers and streams transport nutrients, salts, sediments, and pollutants from watersheds to coastal estuaries and to the ocean.
- h. Although the ocean is large, it is finite, and resources are limited.

5 – The ocean supports a great diversity of life and ecosystems.

- a. Ocean life ranges in size from the smallest living things, microbes, to the largest animal on Earth, blue whales.
- d. Ocean biology provides many unique examples of life cycles, adaptations, and important relationships among organisms (symbiosis, predator – prey dynamics, and energy transfer) that do not occur on land
- e. The ocean provides a vast living space with diverse and unique ecosystems from the surface through the water column and down to, and below, the seafloor. Most of the living space on Earth is in the ocean
- f. Ocean ecosystems are defined by environmental factors and the community of organisms living there. Ocean life is not evenly distributed through time or space due to differences in abiotic factors such as oxygen, salinity, temperature, pH, light, nutrients, pressure, substrate, and circulation. A few regions of the ocean support the most abundant life on Earth, while most of the ocean does not support much life
- i. Estuaries provide important and productive nursery areas for many marine and aquatic species

6– The ocean and humans are inextricably interconnected.

- d. Humans affect the ocean in a variety of ways. Laws, regulations, and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (point source, non-point source, and noise pollution), changes to ocean chemistry (ocean acidification) and physical modifications (changes to beaches, shores, and rivers). In addition, humans have removed most of the large vertebrates from the ocean.
- e. Changes in ocean temperature and pH due to human activities can affect the survival of some organisms and impact biological diversity (coral bleaching due to increased temperature and inhibition of shell formations due to ocean acidification).
- g. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.

## Setup

1. Review the subject of “salmon” with the entire class
2. Informally discuss the relationship that each student has with salmon, such as favourite fishing spots or favourite dinners
3. Discussion can lead to how we know salmon, how we use salmon and where we get salmon for our uses
4. Make a chart, with student input, about how people and salmon interact
5. Use props, posters, videos, or photos to reinforce the life history of the major Pacific salmon species (life cycle, habitats, species)
6. Conduct a class discussion about the requirements of individual salmon in each stage of the life cycle with respect to food and habitat
  - a. Record student responses on a class chart and have students copy the chart for future reference
7. Help students envision the challenges that salmon in BC face as they travel from rivers and streams to the Pacific Ocean and back
  - a. Be sure to include all the obstacles a salmon might face on its journey, including physical obstacles (poor or destroyed habitat, fisheries, and predators for example) and environmental obstacles (such as temperature and salinity changes)
8. Have students fill out the SALMON COUNTDOWN activity sheet. This can be done as individuals or in groups.
9. When the activity is finished, discuss some of the following points and questions
  - a. What percentage of the alevins actually survived to spawn?
  - b. What were some of the natural dangers that the salmon faced during their journey?
  - c. What is the ecological importance of some salmon dying in the rivers and streams? (provide nutrients to the forest).