

Coastal Insight: Eyes on the Coast

Lesson #3: Salmon as a foundation species in BC



Photo: April Bencze

Pacific Salmon Introduction

Salmon are one of the most spectacular of all migrating fish species in the world. As a foundation species on British Columbia's coast, they play a pivotal role in structuring the local ecosystem and as such, are also considered the backbone or lifeblood of BC's coast. Salmon are emblematic of connections to place, supporting food security, cultural identities, economic prosperity, and wellness that goes beyond simply meeting nutritional needs. The livelihood of many coastal communities relies on salmon including coastal First Nations who have coexisted successfully with salmon on the coast for millennia.

Salmon are anadromous fish, meaning they spend part of their life in freshwater where they are born and part in saltwater where they spend most of their adult lives. They are also an important "indicator species", meaning the health of our salmon populations tells us a lot about the health

of our own environment, which, in turn, determines how well our environment can support us. Currently, many salmon populations are in crisis and learning more about our interconnections and how we can approach the long-term resilience of the salmon population is key.

Review and Discussion Questions

- 1) What is the difference between a keystone species and foundation species? List 3 examples of each.
- 2) List the 5 species of Pacific salmon native to the BC coast.
- 3) Approximately what percentage of salmon eggs spawned complete their life cycle in the next generation?
- 4) Research and share an Indigenous story focused on salmon.
- 5) According to the 13 moon calendar, what is the Indigenous name for this month's season, what is represented within it, and which salmon is represented during this time?
- 6) List some of the major threats facing salmon today.
- 7) List some of the ways you are connected to salmon.
- 8) List some different drains found in your home. Where does the water in your drains go?
- 9) What are some of the ways you can help wild salmon and their habitats?
- 10) a) What are the differences and similarities between fish farms and hatcheries?

***Hint* Answer key for teachers:**

Similarities: both are cultured fish, artificially spawned and raised in hatcheries

Differences: salmon destined for fish farms are placed in ocean nets and grow there until they are harvested.

Salmon from hatcheries are released into the ocean and caught in the ocean

- b) Research into salmon hatcheries and fish farms and determine their impacts on wild salmon (Use a variety of credible sources for your research - consider peer-reviewed research from respected scientific journals, look at who funded the research, use many sources, etc.).

Compare and contrast (grades 4-12)

Fill in the table below to compare and contrast the different Indigenous fishing methods.

Fishing Method	Describe the technique
Dip Nets	
Weirs	
Fish Traps	
Reef Nets	
Fish Wheels	

What are some things in common with how all of these techniques are used?

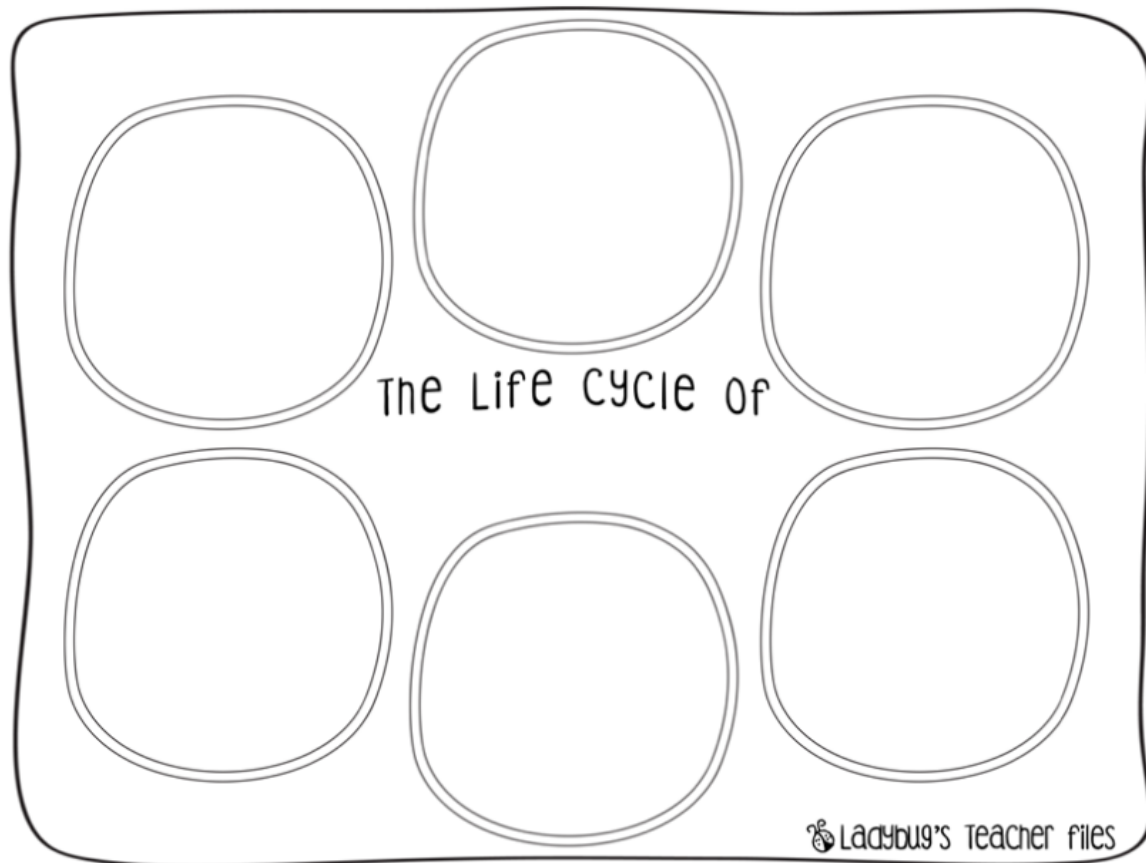
Compare and contrast Traditional Indigenous Management Systems with Contemporary Management systems

	Indigenous Management Systems	Contemporary Management Systems
Who are the decision-makers?		
Describe how selective the fishery and management systems are (e.g. capture and release of target vs. non-target species).		
Describe the ecological resilience with each (e.g. management for long-term resilience or short-term?).		
Where are most of the salmon fishing taking place?		

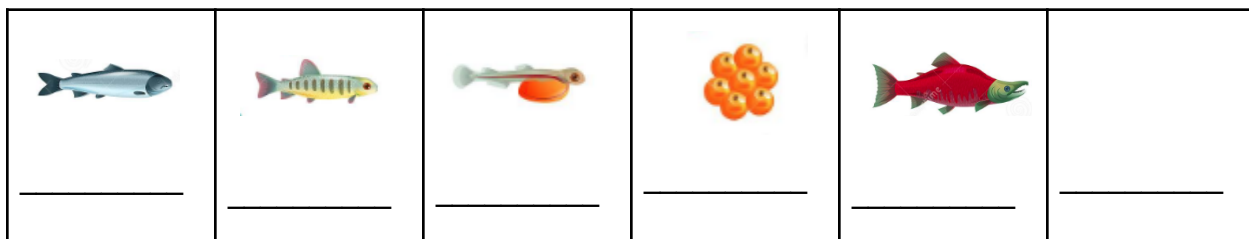
Reference paper to help guide: [Indigenous Systems of Management for Culturally and Ecologically Resilient Pacific Salmon \(*Oncorhynchus.spp*\) Fisheries](#) (Atlas, W et al., 2020).

Grades K-5

Salmon Life Cycle



Name the stage and cut and paste it into the appropriate spot in the salmon lifecycle.



Share the most interesting fact that you learned about the salmon life cycle.

Vocabulary

Anadromous: the term that describes fish that can live in freshwater and saltwater.

Ecosystem: community and interactions of living and nonliving things in an area.

Estuary: is a partially enclosed, coastal water body where freshwater from rivers and streams mixes with salt water from the ocean.

Extirpated: When a species no longer exists in a certain area, but still exists elsewhere.

First Generation Story: A story originating from the first generation of Indigenous peoples, such as creation stories.



Keystone species: has an influence on its environment that is disproportionate to its abundance. These species can be everything from small, unassuming plants to large charismatic animals. Like the keystone in a masonry arch, its removal can have a strong effect on the surrounding community. In the Pacific northwest, species like sea stars, sea otters, and wolves are considered keystone species.

Foundation species: A species that is important due to its significant biomass in the ecosystem, and the strong influence this has in structuring a community. Foundation species support ecosystem structure, process and organisms from the bottom up. Foundation species can be plants or animals that have many species relying on them, not disproportionately to their abundance, but because of their abundance. On the Pacific

Northwest coast, salmon (a group of species) and herring would be examples of foundation species.

Management systems: The social and cultural processes that encode norms for the use of natural resources, including the technologies and understandings that underpin decision-making.

Sustainability: the ability to be maintained at a certain rate or level.

Indigenous management systems: Management systems grounded in the worldviews and daily practices of Indigenous peoples.

Indicator species: are animals, plants, or microorganisms that can represent changes in the environment or be used to monitor changes in our environment. For example, they can tell us about the impact of **pollution** on an ecosystem, or how well an impaired environment is being managed or restored.

SENCOTEN Vocabulary

SXOLE: The Reef Net. The name comes from the word for willow because the reef net is made from strong rope made of willow.

SṪOKÍ - Chinook

QOLEW - Chum

ṪÁWEN - Coho

ṪEKI - Sockeye

HENEN - Pink

RESOURCES, LINKS, AND BEYOND

Salmon Resources and Lesson Plans

- [DFO Stream to Sea Learning resources](#)
- [DFO Stream to Sea Activities and Services](#)
- [DFO Salmonids Lesson Plans](#)

[Canadian Geographic Understanding salmon Lesson Plan \(grade 9-12\)](#)

Salmon Activities and Games

Activity - [Hug a tree hug a salmon](#)

Game - [Salmon obstacle course game](#)

Experiment - [How salmon fertilize trees](#)

Salmon Poster Requests

To request free salmon life cycle posters for your classroom or group contact:

Joanne Day - Joanne.Day@dfo-mpo.gc.ca.

[Where does all the dirty water go brochure](#) (describes the connections between homes, streams and fish)

Links and Additional Resources

- **Video:** [Urban Salmon documentary \(11 mins\)](#) - A closer look with beautiful cinematography at the wild salmon found right in the middle of our cities.
- **Article:** [Indigenous fishing and harvesting techniques paper \(grades 10 - adults\)](#) - Outlines the different Traditional fishing methods and compares Indigenous and Contemporary harvesting management systems.
- **Art Exhibit:** [Legacy Art Galleries Reef Net Exhibition](#) - UVic's art gallery has an exhibit titled "To Fish As Formerly: A Story of Straits Salish Resurgence". Their webpage includes slides, a teacher guide, and a short video.
- **Book:** [The Saltwater People](#) by Dave Elliott Sr. This book is all about the Saanich people and tells about the 13 moons calendar and the reef net fisheries.
- [WEXES – MOON OF THE FROG](#) (Mid February to Mid March). Linked are some graphics of the 13 moons, information of the current moon/month and what's happening in the territory.
- **Book:** [The WSANEC and Their Neighbours: Diamond Jenness on the Coast Salish of Vancouver Island, 1935](#) - National Museum of Canada anthropologist Diamond Jenness did several months of fieldwork with the Coast Salish peoples with his main focus on the WSANEC.

Raincoast Conservation Foundation Research and Resources

Report: [Towards a Vision for salmon habitat in the Lower Fraser River](#) - Raincoast report outlining the history of the Lower Fraser River, the state of salmon and their habitat, current and emerging threats to this habitat, the value of salmon, and the shifting political landscape in which these habitats must be protected and restored.

Report: [Wild Salmon, Pipelines and the Transmountain Expansion](#) - Raincoast report that characterizes the risks posed to wild salmon by a Trans Mountain pipeline spill into the Lower Fraser River or a tanker spill into the Salish Sea.

Report: [Embroided: Salmon, tankers and the Enbridge Northern Gateway Proposal](#) - Raincoast report explores the connections between the Northern Gateway oil industry's proposed activities and how those activities can adversely affect salmon.

Link to other salmon reports: [Raincoast Salmon reports](#) - link to Raincoast body of research and publications around wild salmon conservation in British Columbia.

Videos: [Coastal Insights \(season 1\)](#): **Salmon Surrounds Us; episodes 5 & 6**

- **Episode 5 - [Part I](#)** with Dave Scott (Raincoast Lower Fraser Research and Restoration Coordinator for the Lower Fraser Salmon Program)
- **Episode 6 - [Part II](#) (urban salmon)** with Fernando Lessa (Local nature and wildlife photographer/storyteller)