



Salmon Biology



OBJECTIVES:

Students will:

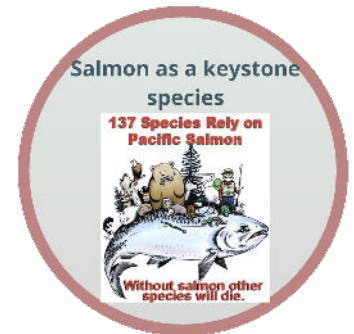
- Describe the life stages of a Chinook salmon by filling in the stages while watching a video about the salmon life cycle.
- Discuss some of the ways salmon are important to the Tribal Cultures of Oregon through watching a video on the Takelma First Salmon Ceremony and reading about Salmon & Tribal People at the Columbia River Inter-Tribal Fish Commission website.
- Identify 3 challenges to salmon survival by playing a salmon survival simulation.
- Understand how salmon relate to their environment & why they are protected by connecting the needs of salmon to the qualities of healthy habitat.

MATERIALS:

- Internet connection: Links to all videos and presentations can be found at calapooia.org/watershed-discovery-kits
- Salmon life cycle video
- [Oregon Department of Fish & Wildlife Salmon life cycle presentation](#)
- Salmon life cycle diagram (included with your kit)
- [First salmon ceremony video](#)
- Columbia Inter-Tribal Fish Commission [Why Salmon are Important to the Tribes](#)
- [Salmon challenges online game](#) from the Smithsonian National Museum of the American Indian

VOCABULARY:

Keystone species: Organisms, usually animals, that play a crucial role in different habitats and have a huge effect on the environment around them. They may help control the population of other species, or perhaps help the growth of certain types of plants in an ecosystem.



Indicator species: an organism that shows the overall health of an environment (its presence or absence *indicates* whether an environment is healthy or not healthy)

First Foods: Food that Oregon tribes have depended on for thousands of years. First foods include salmon, elk, deer, berries, roots, and fresh water (photo credit Oregon Dept of Education Tribal History/ Shared History curriculum).

Oregon First Foods



Huckleberries



Camas bulbs



Acorns



Fiddleheads (ferns)



Salmon



Lamprey



Elk



Duck



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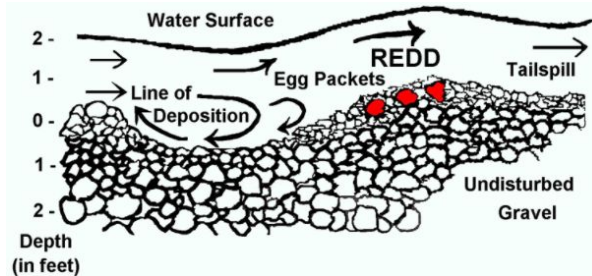
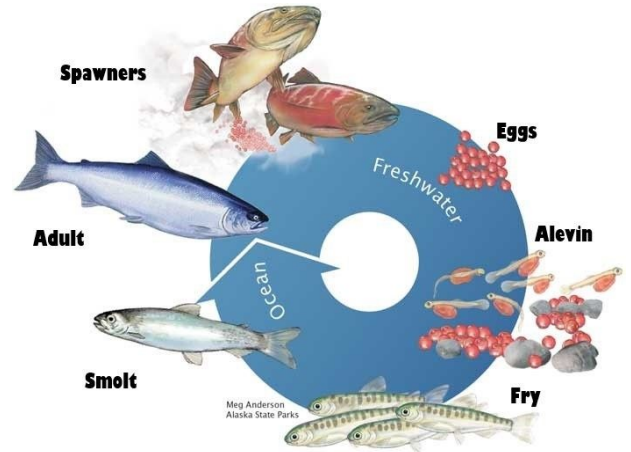


Anadromous fish: hatch in freshwater, migrate to the ocean & stay there until they mature, then migrate back to freshwater to spawn.

Alevin: A newly hatched salmon that still has its yolk sac attached.

Fry: Once the egg sac is finished, the fry stage begins. Fry live and grow in freshwater streams. As the fry grow, they develop dark bars across their bodies for camouflage (to blend in with their environment) called **Parr marks**. At this stage, the fish are sometimes referred to as parr.

Smolt (smoltification) Smolts move into the estuary and adapt to salt water. Smoltification is the changes the salmon go through to get ready for life in the ocean (inside and outside their bodies).



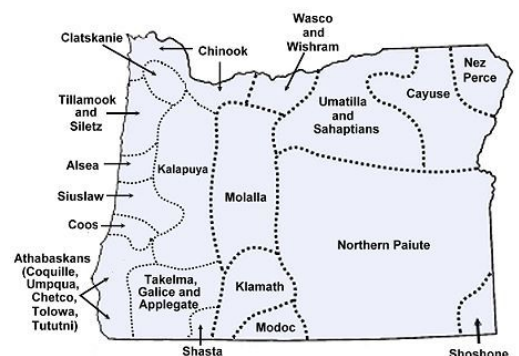
Redd: Nest that female salmon build for their eggs.

Estuary: Where freshwater rivers and streams meet the ocean, and freshwater and saltwater mix together to form **brackish** water. Photo credit DLCD, ODFW.



Instinct: An animal's natural knowledge that the animal does not have to think about doing, and is not learned or taught. An example of this is salmon migrating to the sea and back to freshwater.

Time immemorial: Immemorial refers to a very long time -indefinite in the record of history (long before European contact). Oral traditions of tribes maintain teachings that Indigenous people were created here and have existed in Oregon since time immemorial.





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INTRODUCTION:

- ❖ This activity is to be done indoors. Internet connection will be necessary.
- ❖ The lesson has three parts: Salmon Life Cycle, Salmon & Oregon Tribes, and Challenges to Salmon.
- ❖ Salmon are a Keystone species. If they are removed (or disappear), the ecosystem would completely change.
 - Can you think of other keystone species?
- ❖ Chinook salmon need cold, clear, clean water to develop, grow & survive.
- ❖ Salmon are an indicator species. If juvenile salmon are in a stream, we can assume that stream is healthy, since these fish would not survive in an unhealthy stream.
- ❖ Salmon are anadromous, meaning they are born in freshwater, then migrate to the ocean and return to freshwater streams to spawn.
 - There are 6 stages in the salmon life cycle: eggs, alevin, fry, smolt, adult, and spawning adult.
 - Chinook and Coho salmon die after spawning, but steelhead do not die, and can migrate back and forth from the stream to the ocean several times throughout their lives.
- ❖ Chinook salmon live in the stream for 1-2 years, then migrate to the ocean.
 - They live in the ocean for 2-5 years, growing larger & stronger.
 - Then they return to the streams where they were born to spawn and die.
 - How do you think salmon find the streams where they were born?
 - Why do Chinook salmon die after they spawn?
- ❖ Salmon are an important part of the culture of the Pacific Northwest
 - Salmon are a First Food for the Tribes that have lived on this land since time immemorial.
 - Salmon have been and continue to be a spiritual and cultural center of importance and meaning to tribes in Oregon since time immemorial (info credit: ODE Tribal History/Shared History Curriculum)
 - The annual return of the salmon is an important event to the Tribal People of Oregon, and is celebrated with an annual First Salmon Ceremony, which occurs before salmon fishing can begin each year.
 - Salmon are an important part of the Oregon economy.
 - A British Columbian report for 2012 - 2015 estimated that the commercial salmon industry in Oregon brings 90 million dollars, and 910 full time jobs to Oregon each year.
 - The same report estimated the sport fishing industry added 285 million dollars and 2850 jobs!
 - The total Pacific Salmon economy is worth an estimated 1.5 BILLION dollars per year.
- ❖ Salmon face many challenges to their survival.
 - Salmon have been facing some challenges for millions of years, and some challenges are more recent, like dam construction.

