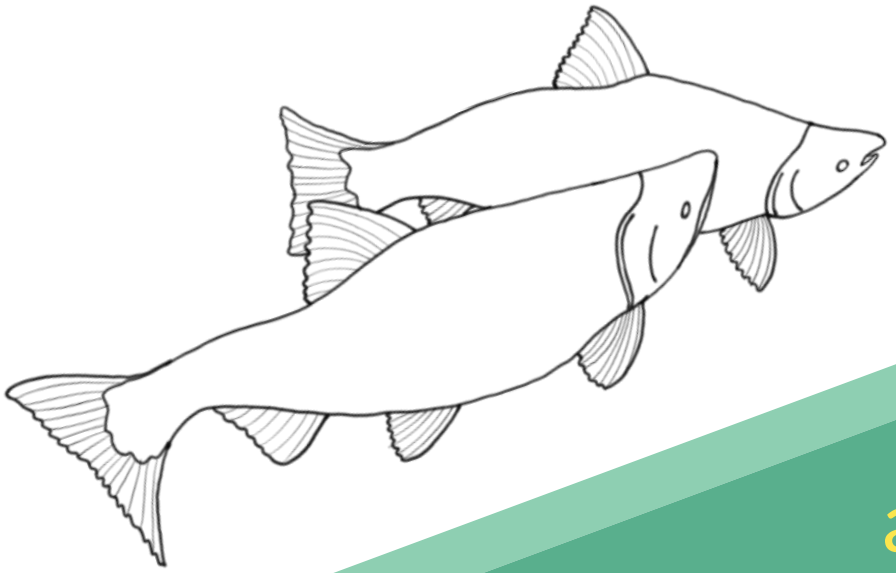
SIERRA CLUB BC

Illustrations by
Amira Maddison

THE SALMON LIFECYCLE



Learn about the
Pacific salmon lifecycle
and colour with Sierra Club BC

INTRODUCTION TO PACIFIC SALMON

Pacific salmon species are **key** in many ecosystems and support many other beings.

Different species of Pacific salmon vary in terms of their life cycles. Some spend hardly any time in **natal streams** (the stream where they were born); some spend years. Some mature at two years of age; some mature at five. Some live for only a couple of years; others live for ten. And some, like Steelhead and Cutthroat, can even spawn more than once.

Despite all this variation, we can still make some general observations about the life stages of salmon. Adult spawners often journey for hundreds of kilometres to return to the waters their parents spawned in, and where they themselves were born. If they make it back, eluding all sorts of obstacles (including leaping over waterfalls, and dodging hungry bears), the males and females court, and ultimately breed. At the crucial moment, the male releases sperm and the female releases eggs ... at precisely the same time! The eggs and sperm float in a fog of milt to the bottom of the stream or lake bed where the female has painstakingly prepared a **redd** (a nest). This gravel-covered nest will hopefully protect the eggs until they are ready to hatch. While new salmon are preparing to enter the world, their parents die (usually only days after spawning). Their bodies remain in the water or along the shore to decay and/or be eaten by other species. In this way they continue to nourish the environment around them.

There are ten species of Pacific salmon. The seven that live in B.C. include **Sockeye, Chinook** (King or Spring)**, Coho, Pink, Chum** (Dog)**, Steelhead Trout,** and **Cutthroat Trout.** Two more live North America, **Mexican Golden Trout**, and **Gila Trout. Masou (or Cherry)** salmon live only in Asia. Plus, there are also freshwater forms of **Sockeye (Kokanee salmon), Steelhead Trout (Rainbow Trout),** and **Masou Salmon.**

TRIBAL PARKS AND INDIGENOUS PROTECTED AREAS

Old-growth logging has destroyed salmon spawning streams in many areas of BC. Indigenous peoples remind us of the interconnections between all beings and our responsibility to steward the earth:

> **"As QUU-US [human beings] we have a responsibility to manage our natural inheritance with care. Our natural inheritance includes everything from cedar and salmon to songs and names; it includes all of that and even our own natural selves."** Eli Enns, member of Canadian Indigenous Circle of Experts

Great success has already been seen in creating Tribal Parks to protect interconnected habitats, including those of salmon. One example is on Wah'nah'juss Hilth'hooiss (Meares Island). Located in Tla-o-qui-aht and Ahousaht territory near Tofino, the area has been stewarded since time immemorial by Nuu-chah-nulth peoples. With some of the largest and oldest cedar trees in the world, the island has provided medicines, drinking water, cedar for carving and many other valuable gifts to the people of the area.

In 1984, Chief Moses Martin declared Meares Island a Tribal Park. By protecting the forests of the island, salmon can flourish, which in turns helps many other species to survive.

Dive deeper to learn about the efforts to create the Meares Island Tribal Park at:
https://sierraclub.bc.ca/50-places-meares-island/ (including an interview with Chief Moses Martin)

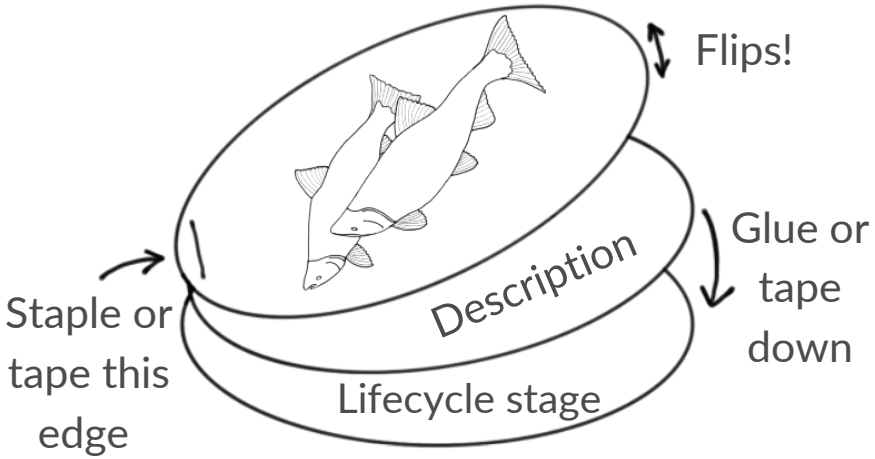
DID YOU KNOW?

Salmon can migrate more than 3,000 kilometers upstream through freshwater to spawn (such as in the Yukon River). That is like driving halfway across Canada!

INSTRUCTIONS

CREATE YOUR OWN SALMON LIFECYCLE ACTIVITY

1. **Print** the next three pages.
2. **Colour in and cut out** the stages of the salmon lifecycle (images) and match them to their description.
3. **Cut out and glue** the descriptions to the correct stage of the salmon lifecycle to the Pacific Salmon Lifecycle Map (page 6).
4. **Staple, tape or glue** a corner of your coloured in salmon stages images to create a flap for each stage of the lifecycle with the description underneath.



FUN FACT!

Pacific salmon are also **semelparous**, meaning that most adults die after reproduction and become nutrients and food in the freshwater systems. They are the nutrient backbone to B.C.'s coastal ecosystems.

DID YOU KNOW?

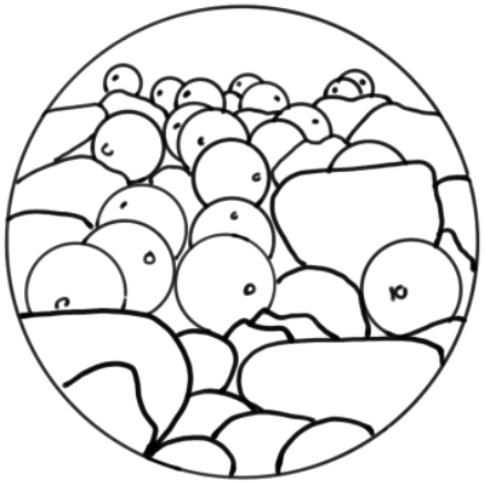
Pacific salmon swim 'home' to where they were born to reproduce! Adults return to the same streams that their parents used. This behaviour, known as **natal homing,** has allowed the development of extensive genetic diversity within each species, allowing salmon to be highly adaptable. Another species that returns to where it was born is sea turtles.

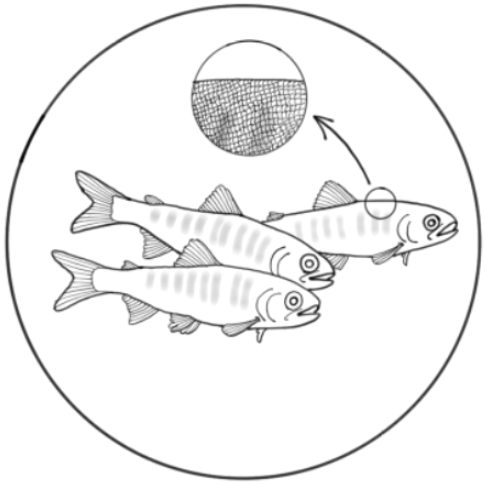
CREATE THE SALMON LIFECYCLE

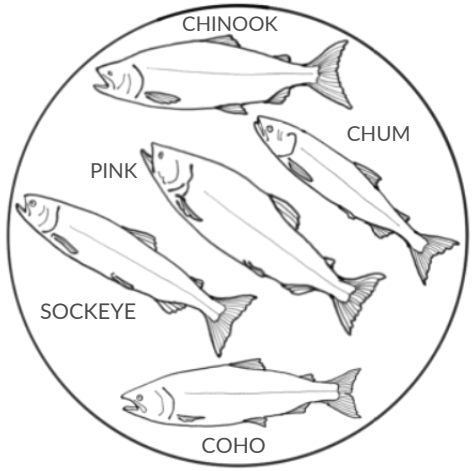
Colour in the stages of the salmon lifecycle and match them to their description. Watch out! They're in random order. Answers are on page 12.

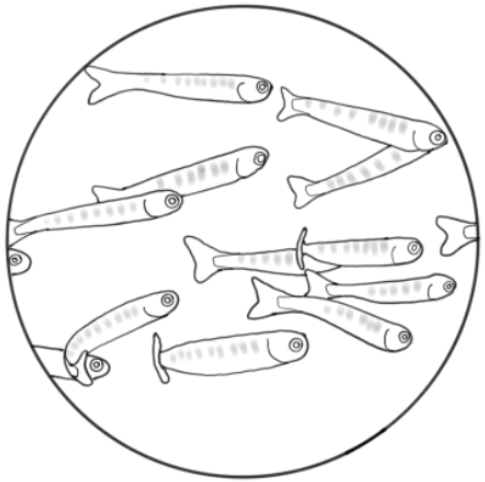
DID YOU KNOW?

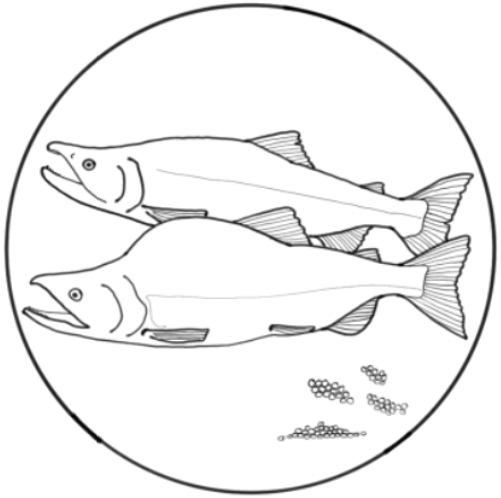
All Pacific salmon start their lives in freshwater (streams, lakes, rivers, etc.) and then migrate to the ocean. They later swim upstream to rivers where they were born to spawn and die, meaning they are **anadromous**.

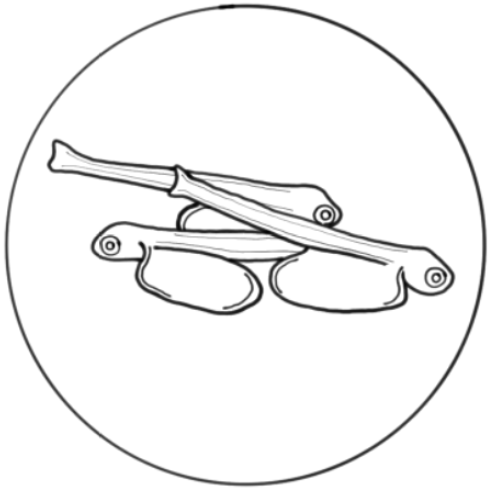












SALMON LIFECYCLE DESCRIPTIONS

SMOLT

Starting to adapt to the ocean in estuaries, growing scales and eating zooplankton, insects, worms, sand fleas and shrimp.

MIGRATION

When they are ready to spawn, adult salmon will return to the same riverbed where they were born, known as natal homing.

ALEVIN

Hatches from the eggs. The yolk sac from the egg produces the food and is like a lunch sack!

EGGS

Laid in the gravel in riverbeds during the fall. Will incubate for 2-5 months, hatching in the spring.

DEATH

The salmon are exhausted. When they die, their bodies may quickly be eaten by other beings or they may decompose and put nutrients back into the ecosystem.

SPAWNER

Ready to breed, this salmon will stop eating and use their strength to swim up the fresh water river where they were born to lay or fertilize eggs.

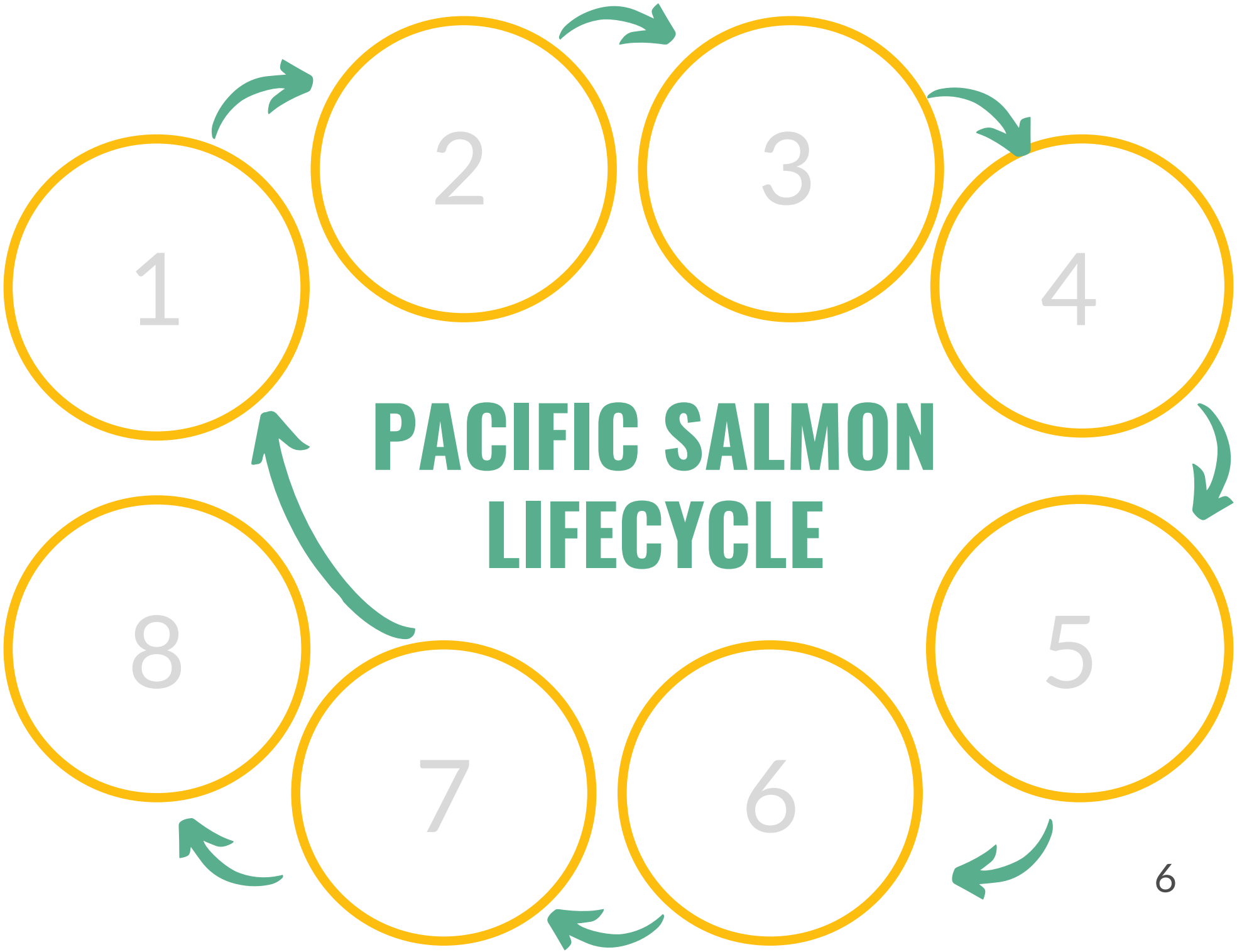
ADULT

Fully adapted to ocean life living in salt water. Depending on the species, will spend between 4 months and 5 years in the ocean.

FRY

Start their journey downstream guided by gravity and stream flow. Search for their own food such as larvae, adult insects, fish eggs and rotting carcasses.

PACIFIC SALMON LIFECYCLE



THREATS TO SALMON

Climate change is shifting weather patterns which leads to more severe storms, floods, drought and wildfires. In many places, climate change is leading to warming weather which is resulting in freshwater streams warming up too! The increasing atmospheric temperatures are reducing the amount of snowpack and glaciers are retreating. This means that there is less water in the rivers which is making it more difficult for salmon to practice natal homing to travel back to their spawning grounds. Flooding and storms are also increasing the risk of salmon eggs and spawning grounds being washed away.

Other threats to salmon include:
-habitat loss and stream erosion from logging
-over-fishing
-fish farming
-overuse of water resources
-hydroelectric dams
.

RELIANCE ON SALMON

There are at least 137 different species that rely on salmon. Examples you are probably familiar with include; bears, eagles, orcas and river otters. A typical orca requires much more energy than a human. One orca tends to eat 25 kilograms of salmon a day. The 300 resident orcas in B.C. probably consume 1,000 tonnes of salmon per year! That is the weight of 100 large trucks!

DID YOU KNOW?

Black bears, grizzly bears, wolves and eagles found on the Pacific Northwest coast take large quantities of salmon into the nearby forests after catching them. These salmon provide food for trees and plants. In years with good salmon runs, the trees grow even bigger! Salmon DNA can even be found in living trees here in British Columbia.

FUN FACT!

How high can you jump? Salmon can jump over 2 metres! This is useful for jumping over small waterfalls when migrating upstream.

FOLLOW UP QUESTIONS

What are some threats facing Pacific salmon?

Some people love to eat salmon in their sushi. How do you like to eat salmon?

Which one do you think is the biggest threat? And why?

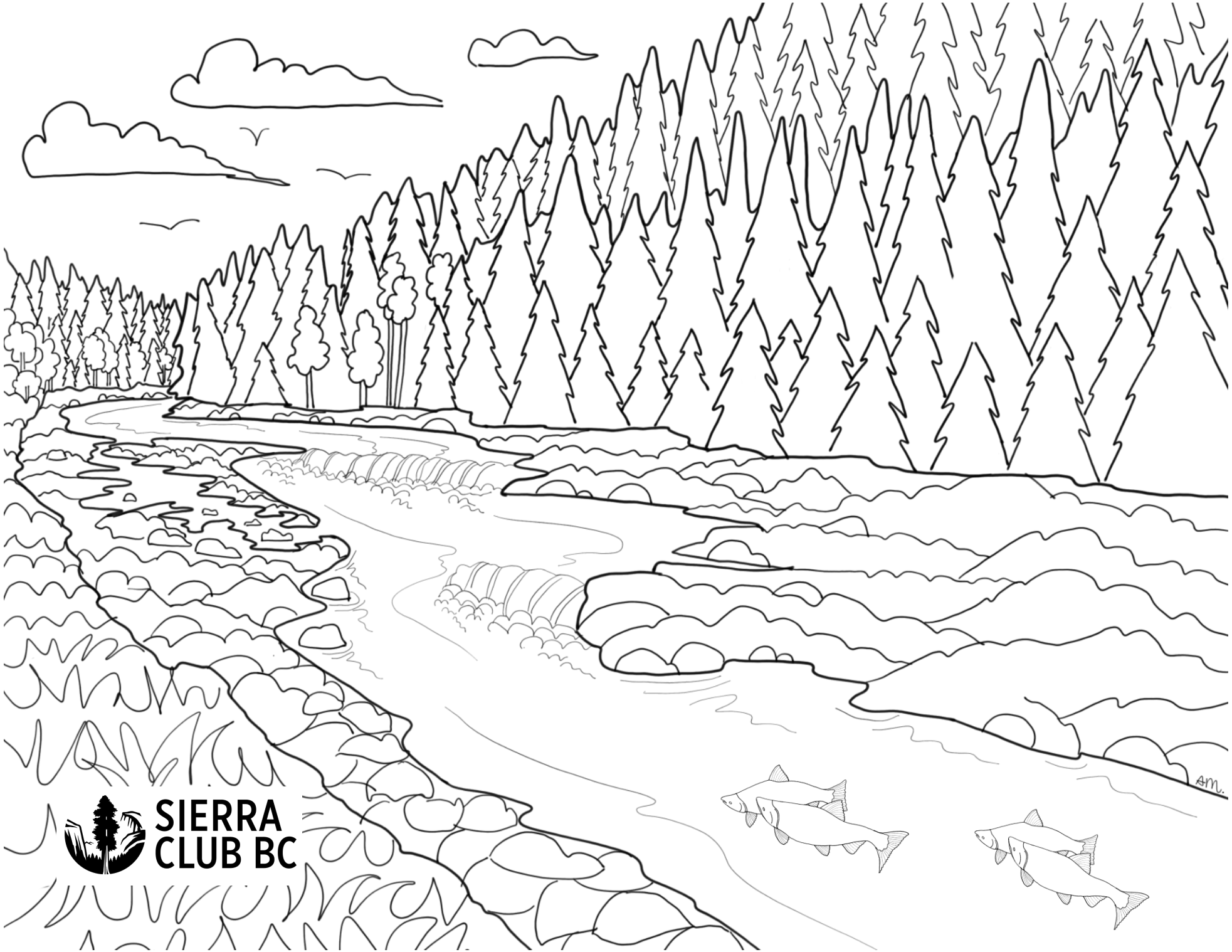
Make a list of 3 other living beings that eat salmon

DID YOU KNOW?

Salmon is a traditional food and important in the cultural practice of many Indigenous peoples. For example, the W̱SÁNEĆ (Saanich) People pay homage to the salmon with a very special song and ceremony to honor the salmon, as a way to show respect to its new generation. Traditionally, each year, after the first sockeye salmon was caught, all fishing would stop, and the ceremony of prayer and feast would begin.

Learn more about the 13 Moons of the W̱SÁNEĆ (Saanich) Peoples, including ĆENŦEḴI-THE SOCKEYE MOON at firstvoices.com/ (see full link on page 11).

Declining salmon numbers are impacting the traditional cultural practices and diets of many Indigenous peoples, who have long been advocates for caring for salmon ecosystems and reducing other factors that have negative impacts on salmon.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WORD SEARCH

Q X K S W M W L B D E S W Z Z C O W S R
F X G V A U Y S P T H I D Z H B T W A E
O G R B B A B Z H M F A Q U F Z D J D N
E C E J H R X X A R L B M S S M S P Q W
C A K Y G I G K M B W E N K B H G Y G A
O I P B E D V M J I U D X H O B P D R P
G R E U H K U S A L G R H G W T K D T S
K O O N I H C T U J L C V E H U L M C J
V H D G L U B O S L F O M E H Z O B N A
W M P Z M N C J S M Z O R I G U G G V I
I K N Y O N S E O L O K G A O P C O C Z
K G H M V M Y Z I P R L E H Y Z L G B Z
T N L J U B Z F Q F B G T F H F N T F G
Z A I D O G E A L E V I N G R U D S L B
S O D P K C B M W R X A C N Y Y N A F V
G P K H Y T H R T A Z K E I B H L D M D
G C Y C N Z T V M G M G V K T Z I U F A
W O L F K B L F I M N X S D I S C L B V
R E A A D Q Z B I H K O P O H O C T E W
K T A P J Q H H X F E E C P I B U O O E

ADULT
ALEVIN
CHINOOK
CHUM
COHO
DOG
EGGS
FRY
KING
LIFECYCLE
PINK
SALMON
SMOLT
SOCKEYE
SPAWNER

STORY TIME!

Find your favourite place to sit, get cozy and do a read aloud of the '**Salmon Forest' written by David Suzuki and Sarah Ellis.** This will help highlight for you the interconnections between salmon and other living beings, who rely on each other in the forests, rivers and oceans. See other book suggestions on page 11.

RESOURCES

Visit our **EcoMap**. This tool will help you learn about the fascinating beings that live in BC's various 'Ecoprovinces', including traditional Indigenous uses of and connections to these lifeforms. There is even a glossary with vocabulary specific to nature. **sierraclub.bc.ca/ecomap/**

Seeing Through Watchers' Eyes – Between the Worlds (STWE) is an online interactive learning tool built using the Prezi platform by tSouke member kQwa'st'not (Charlene George). It tells the story of the land where the mural lives, on the territory of the Lekwungen speaking peoples (Songhees and Esquimalt Nations). This learning tool is based on the thirty-two foot collaborative mural Through Watchers' Eyes, housed at Spencer Middle School (School District 62), as designed by kQwa'st'not (Charlene George).

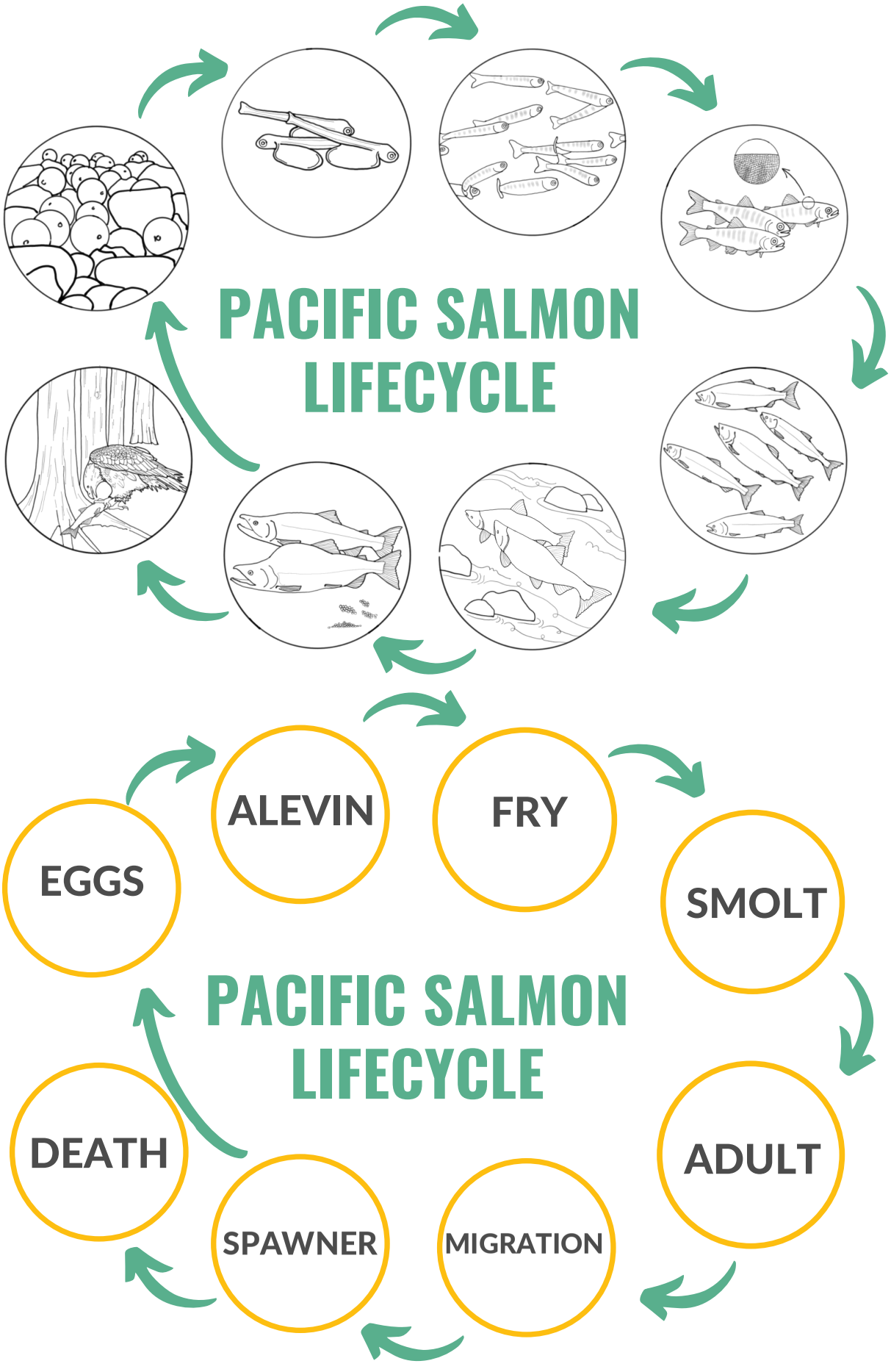
Built using the Prezi platform with support from Sierra Club BC, this tool is a publicly shareable, culturally rich Indigenous learning tool to support community learners of all ages and backgrounds to see through another's eyes. The mural and online tool help to open our eyes to new perspectives and answer many questions including where to begin in addressing the climate crisis. This tool invites learners into a new way of seeing and relating to the natural world while offering opportunities for learning using various modalities. **sierraclub.bc.ca/watcherseyes/**
STWE slides of the story that include salmon: 175, 176 [includes an audio recording of a written story about when the first salmon were celebrated by the W̱SÁNEĆ (Saanich) Peoples.]

Learn more about the 13 Moons of the W̱SÁNEĆ (Saanich) Peoples, including a moon centered around salmon (ĆENŦEḴI-THE SOCKEYE MOON) at firstvoices.com/explore/FV/sections/Data/THE%20SEN%C4%86O%C5%A6EN%20LANGUAGE/SEN%C4%86O%C5%A6EN/SEN%C4%86O%C5%A6EN/learn/stories/589847d1-a2eb-4962-9a43-db5fd7316ddd

More resources for learning about Salmon:
Pacific Wild pacificwild.org
World Wildlife Organization worldwildlife.org/species/pacific-salmon
Raincoast Conservation Foundation raincoast.org/salmon-carnivore-project/
Watershed Watch watershedwatch.ca
BC Salmon bcsalmon.ca
Pacific Salmon Foundation: psf.ca/

Read aloud story ideas to learn more about salmon:
'**The Salmon Bears**', by: Ian McAllister and Nicholas Read
'**Salmon Forest**', by: David Suzuki and Sarah Ellis
'**The Journey of Dog Salmon**', by: Bruce Martin and Tla-Keesh-Pihk-Uh, Adapted by Donna Klockars and Terri Mack
'**Nowhere Else on Earth: Standing Tall for the Great Bear Rainforest**', by: Caitlyn Vernon (A book for older kids and teens. An electronic version is available from the Greater Victoria Public Library)

ANSWERS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