



SOMETHING'S FISHY...

Salmon are an amazing fish. As we will learn, they are very different from other fish and this makes them very special. Salmon have been around for thousands of years and until recently, have lived happily. About a hundred years ago, the salmon started disappearing! Why? We have discovered the reason is that humans have been harming salmon and their homes. Luckily, there are a lot of people who care very much about protecting this fantastic fish and many efforts are underway to save the salmon. We hope that with this help, salmon stay around for many years to come!

The picture below shows the life cycle of the salmon. This cycle is like a circle... it begins where it ends. Read on to learn more about the story of the salmon's life.

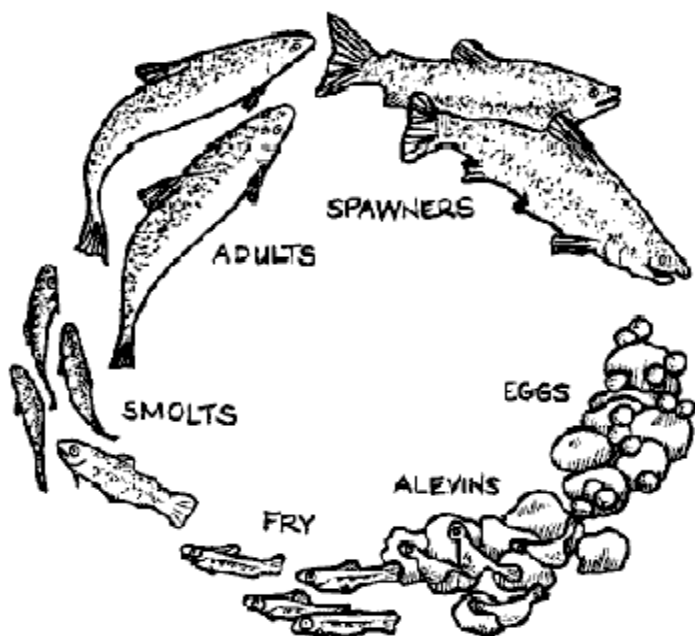
The Story of the Salmon Cycle

The salmon life cycle starts when the baby salmon hatches from an egg in a stream and ends when the adult salmon return to that very same stream to lay and fertilize its eggs.

Salmon have round, pink eggs that are no bigger than a pea! The female salmon lay their eggs and bury them under gravel on the bottoms of streams. They stay safe under the gravel with hundreds or thousands of other eggs that will become their brothers and sisters.

In the spring, baby salmon hatch from these eggs. The newly hatched salmon are called "alevins". These alevins look really weird. They have see-through skin so you can see their hearts pumping in their bodies! They have huge eyes and a sac full of yellow yolk attached to their bellies. An alevin's body looks like what yours would if you held a big beach ball to your belly! This sac of yolk attached to the alevin's stomach is actually the alevin's food. For between 30 to 50 days, the alevins stay hidden in the gravel and use this yolk as their meals. Once all the yolk is used up, the sac will shrink and disappear.

The speed at which the baby salmon grow depends on the temperature of the water they are in. The warmer the water is, the faster the little salmon will grow. But what a salmon thinks is warm, and what we find warm, is very different. If we jumped into a bath that was warm to a salmon, it would seem pretty chilly to us! Salmon like very cold water and it's the perfect temperature for them when it is between -4° C and 14° C. Water that is warmer than this is not (cont...)



(the story goes on...)

good for the salmon!

The baby salmon grows to the next stage when it is called a “fry”. They are hungry and go in search of food. Fry really like to eat and this is what they do so that they can continue to grow. At first they swim around eating almost anything they can, kind of like when you come home from

school and raid the kitchen! Fry like to eat plankton, insect larvae (which are hatched insect eggs) and even adult insects that have fallen into the water. Soon the fry will be able to jump out of the water to catch insects.

Lots of animals like to eat these small salmon so they have to be very careful to avoid “predators”. Predators are animals that like to eat other animals. They are hunters! Other fish, like trout and perch, birds and otters all like to eat fry.

Once it's time, the young salmon start to swim downstream toward the ocean. If you have ever been swimming in the ocean, you have probably noticed that the water in the ocean is very salty. The water in rivers and streams, where salmon are born, is not salty. This non-salty water is called “freshwater”. Salmon are one of the few fish in the world that can live in both saltwater and freshwater. But to do this, their bodies have to go through changes that make them ready to live in the salty ocean.

Salmon will swim to the mouth of the ocean, called the “estuary”. Estuaries are places where fresh water mixes with salt water. By this time, the salmon are called “smolt”. Smolt are young salmon that are going through changes that make their bodies ready to live in saltwater. Once this happens, the salmon can swim out to sea!

Salmon live in the ocean for one to seven years, depending on what species of salmon they are. They travel all over in schools. But these aren't schools for learning... salmon schools are big groups of fish that swim together in the ocean. Many kinds of fish swim in schools because being in a big group helps protect the salmon from predators. There are a lot of animals in the ocean that love to eat salmon like seals, sea lions, orcas (or killer whales), sharks and porpoises. Birds like eagles, gulls and cormorants like to eat adult



(and on...)

salmon too.

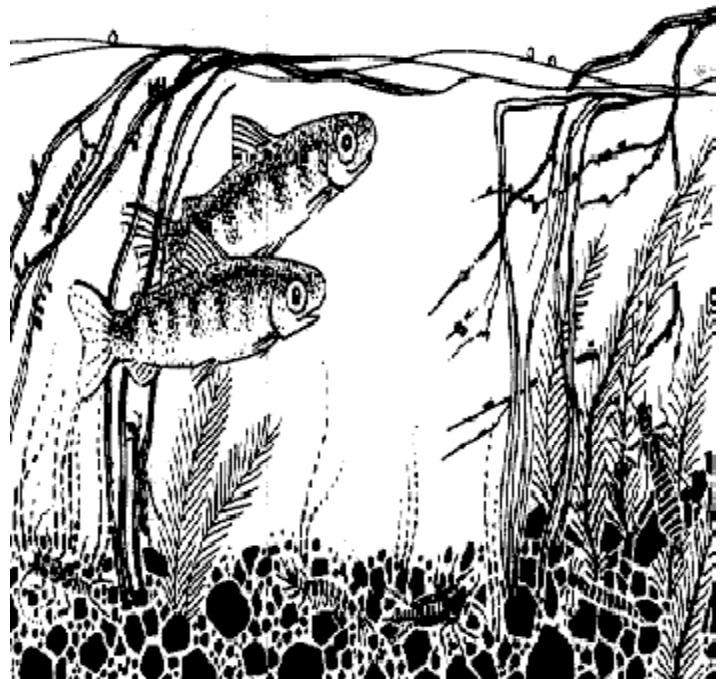
The colouring of salmon also helps protect them from becoming “prey”, which are animals that predators hunt! Salmon come in many different colours but most have spots on their backs and sides, and a bright, silver coloured belly. When something that wants to eat a salmon, like a seal, is swimming above, the spotted back may help the salmon blend in with the rocks and sand on the bottom of the ocean. When the salmon is swimming above a predator, their bright belly might look like the surface of the water and they may get away unnoticed. This colouring is a clever disguise to avoid being gobbled up!

In the ocean, salmon eat different things than they did when they were fry in the streams. Adult salmon will eat other fish, small squid, shrimp and eels. They also really like to eat “krill” which are tiny, pink creatures that look a lot like shrimp. Salmon eat a lot of these pink krill and this is partly why a salmon's flesh is pink!

Once the salmon have grown up, they start to swim back to the streams where they were born. Scientists think that salmon might be able to sense (cont...)

Let's EAT!

Baby salmon love to eat. Help these fry find their food by circling six insects hidden in the stream.



(and on!)



differences in the chemical smell of the streams. They find their way back to their special stream by sniffing out the smell of the stream where they were born. Do you think that you could smell your way home like salmon do?

Once salmon leave the salt water of the ocean and enter fresh water, they don't feel hungry anymore and stop eating. Salmon use a lot of energy on the trip back

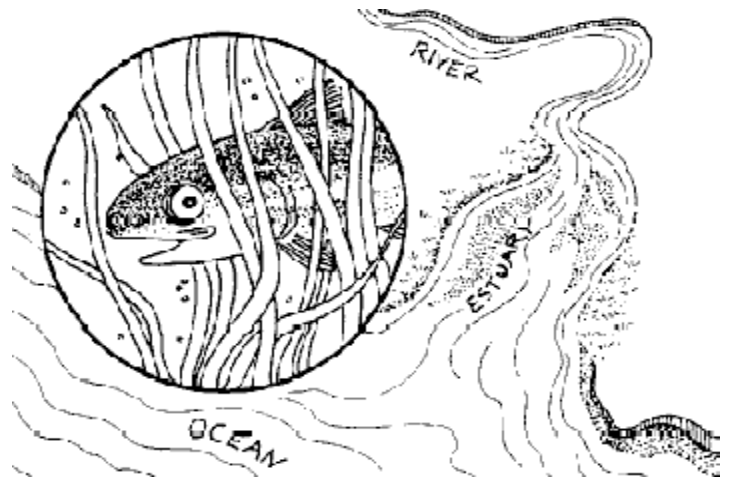
to their stream. During the difficult journey, they encounter many dangers. Bears and other animals may try to eat them! Their bodies change in colour and shape. They swim against the flow of the water and can even jump up small waterfalls!

Once salmon reach the stream where they hatched, they "spawn". This means that the female salmon dig holes in the gravel with their tails and lay hundreds of tiny, pink eggs in these holes. These nests are called "redds". The average number of eggs the female salmon lays in these redds is between 2,500 and 3,000 but they can lay up to 6,000! The male salmon then fertilize the eggs in the redd and the female buries the eggs with gravel to keep them safe and hidden.

Once salmon have spawned, they are very, very tired. They are skinny and sick looking because they have had a hard journey. Now that they have made new salmon eggs, the adult salmon die. Many animals eat these salmon and their bodies also provide nutrients for the plants and the soil of the forests that grow nearby.

In a couple months, the eggs that these salmon laid will hatch. These baby salmon will start the cycle all over again and will hopefully someday return to this same stream where their parents were born.

~The End and
the Beginning~



Salmon Words to Know!

Alevin: a newly hatched baby salmon. They have see-through bodies, big eyes and a yolk sac attached to their bellies.

Estuary: place where freshwater mixes with salt-water from the sea.

Freshwater: water that is not salty.

Fry: a young salmon that lives in streams and finds food on its own.

Krill: tiny, pink creatures that look like shrimp. These are a big part of the adult salmon's diet in the ocean.

Predator: an animal that hunts other animals for food.

Prey: an animal that is hunted for food.

Redd: a salmon nest in the gravel on the bottom of streams where the female salmon lays her eggs.

Smolt: a young salmon that goes through changes that make its body ready to live in saltwater.

Spawn: when the female salmon lays her eggs and the male salmon fertilizes these eggs.



Different Species of Pacific Salmon

Did you know that not all salmon are alike? There are actually five salmon species found in B.C. waters. They are Chinook, Chum, Coho, Pink and Sockeye. All of these different kinds of salmon are the same in many ways. They have the same general shape, and act pretty much the same when they are alevins and fry.

These species are also different in some ways. The species of salmon are different sizes. The biggest species is the Chinook salmon, which weighs between 4 to 16 kilograms. The largest Chinook salmon ever recorded weighed 57 kg (126 lbs)! Pink salmon are the smallest of the salmon species but there are lots of them! There are more Pinks than any other type of salmon species. Pink salmon only weigh about 1.5 to 3 kg when full-grown. Sockeye salmon, which are the slimmest and most streamlined of the Pacific salmon, weigh 3 to 5 kg. Coho weigh 3 to 6 kg and Chum weigh 4 to 9 kg.

The salmon we find in our oceans also differ in their body colour. Sockeye salmon are a blue-silver colour. Chum salmon look a lot like sockeye salmon but have black specks on their sides. Pink salmon are not actually pink but are silver with lots of spots on their backs. Coho salmon are also bright silver in colour while Chinook salmon are blue-green with spots on their backs.

These salmon species don't spend the same amount of time in fresh water. Pink and Chum salmon will only stay in streams for a few days to a few weeks after hatching. Coho, Sockeye and Chinook salmon all stay in fresh water for a much longer time. Coho salmon will stay in a stream or a lake for a year and Sockeye salmon stay in lakes for 1 to 3 years. Chinook salmon will live in streams for about 90 days, but sometimes up to a year before travelling out to the salty sea.

These species are also different from one another because they live for different lengths of time. Pink salmon live up to 2 years. Both Chum and Coho salmon live for 3 to 4 years. Sockeye salmon live anywhere from 4 to 5 years and Chinook, who live between 2 to 7 years, live the longest of all the Pacific salmon.



Remember me?

Let's see what you remember about salmon at all the stages of its life cycle. While you colour in the salmon, think of ways you can help save this fish!



This is a salmon egg. Do you remember what colour salmon eggs are? **Colour in the egg!**



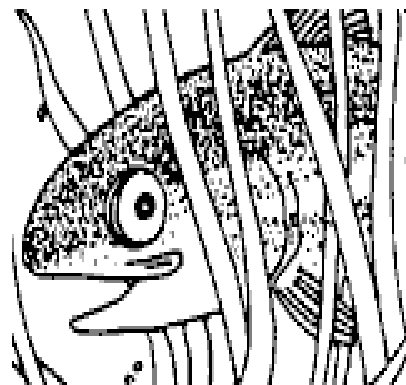
This is an alevin. Do you remember what the sac attached to an alevin's belly is used for? **Colour in the alevin!**



This is a fry. Do you remember what fry like to eat? **Colour in the fry!**



This is a smolt. Do you remember why smolts' bodies have to go through special changes? **Colour in the smolt!**



This is an adult salmon that has returned to the stream where it was born. Do you remember how salmon do this? **Colour in the salmon!**





FUN FISHY FACTS!

Did you know...

When salmon are swimming upstream, they can jump 2 meters into the air!

Salmon are very important in many First Nations cultures. There are legends based on the salmon and many songs, dances and artwork are created to honour salmon.

Salmon return to the exact stream where they were born to lay or fertilize their eggs. Scientists think that they are able to smell the differences in the water and use this to find the stream where they hatched.

Many animals like to eat salmon. Whales, dolphins, seals, sea lions, birds, bears and even other fish like to eat salmon. Humans like to eat salmon too!

Most fish live in either salt water or fresh water. Salmon are special because during their life cycle, they live in both the salty water of the ocean and the fresh water of streams.

There are five different species of salmon that live in the waters around British Columbia.

When baby salmon, called alevins, first hatch, they have a yolk sac attached to their bellies. They use this yolk as food during the beginning part of their lives.

A female salmon can lay up to 6,000 eggs in one redd!

Salmon return to streams to spawn. Their swim upstream to spawn is very hard. During this time, salmon don't eat any food at all!

Salmon can travel hundreds, even thousands of

kilometers. The longest known trip ever taken by a salmon was a Chinook salmon that travelled 3,845 km upstream to spawn!







The largest salmon on record is a Chinook salmon that weighed 57 kilograms!



Down in the Dark

These alevins are hiding in the gravel. It's so dark down there, all you can see is their eyes! Solve the word clues and fill in the blanks, using the eyes for the letter "O".

- The mixture in the sac attached to the alevin's belly is called _____.
- A salmon spends part of its life living in the _____.
- Young salmon ready to swim out to the ocean are called _____.
- Alevins grow more _____ if the water of their stream is too cold.
- When an alevin grows up, it becomes an adult _____.

1. —  — — 
2.  — — — —
3. — —  — —
4. — —  — — —
5. — — — —  —



Threats to Salmon

Like many other animals, salmon are hurt when their habitat is destroyed. Here are some things that threaten salmon and salmon habitat:

• **Cutting down trees and plants alongside streams**

Plants hold onto the dirt along the sides of streams with their roots. When these plants are taken away, the dirt can wash into the stream. If this happens, the dirt might cover up the gravel where the salmon eggs are hiding which will not allow oxygen-rich water to move around the eggs. Then the eggs might suffocate! Dirt in the water also makes it murky. This isn't good for salmon

because when the water isn't clear, they might not be able to see their food! Salmon also need to be kept cool. Trees and plants that grow alongside the streams keep the water the perfect temperature for the salmon by providing shade.

• **Removing logs and rocks from streams**

Trees that grow beside streams and rivers sometimes fall into the water. The old, fallen logs slow the river down and make pools that are safe places for salmon to have a much needed rest. If there aren't any pools in streams, then the salmon can get tired and weak.

• **Allowing cattle to walk in rivers and streams**

Sometimes fields have been made alongside rivers. This can mean that cows and other cattle might get into the river to have a drink. When cattle walk in rivers and streams, they might step on fry as they make their way to the ocean or might crush salmon eggs that are hidden in the gravel.

• **Building dams across rivers**

Dams are huge structures that block a river so that the flow of the water can be used to make electricity. We all need electricity to power many of the things we use everyday like lights, telephones and TVs, but these dams change the rivers. They make a big backup of water that slows down the flow of the river. They also block salmon from getting down the river when they head out to sea, or up the river when they return from the ocean to spawn. Sometimes dams have fish ladders, which are steps that the salmon can swim up to get past the dam. These fish ladders are built to help salmon get past the dam that is blocking the river.

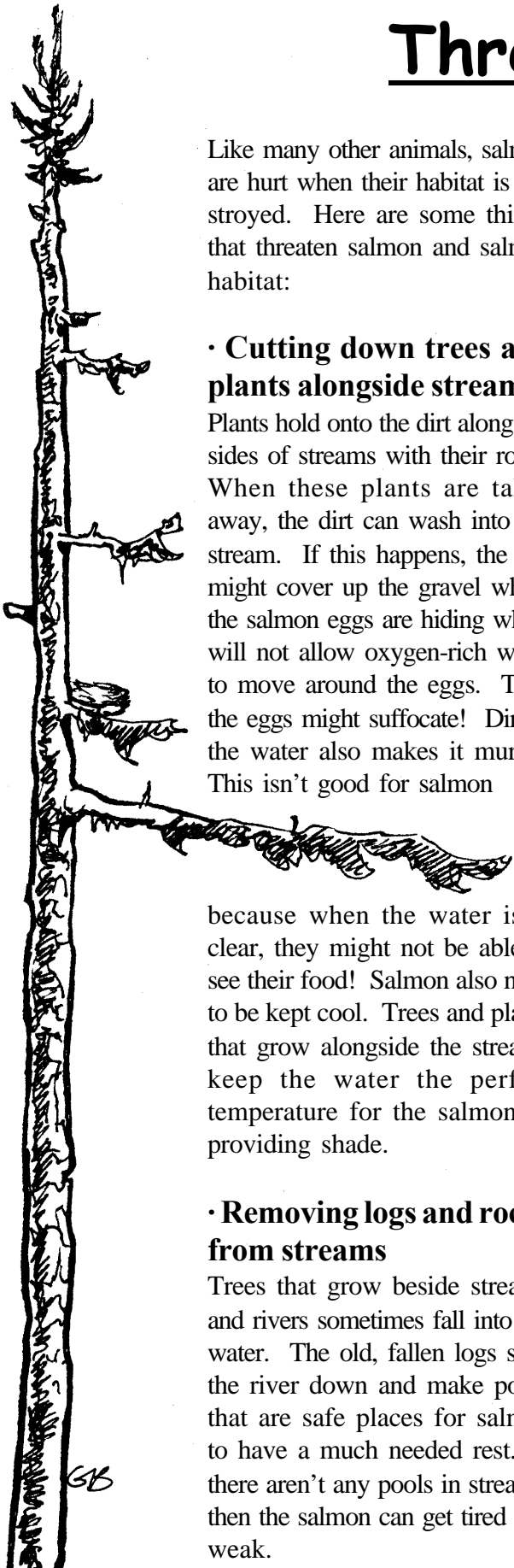
• **Dumping chemicals into the water**

Like many animals on earth, salmon need clean water to stay healthy. Sometimes things get into rivers and oceans that pollute them and this can make salmon very sick! Sewage, fertilizers, detergents, garbage and chemicals are all bad for salmon and should never be thrown into the water.

• **Over-fishing of salmon**

People all over the world like to eat fish but there aren't as many salmon left in the oceans as there once were. Every time we catch a salmon, even fewer salmon will be able to return to their rivers to spawn.

Many kinds of salmon are extinct and many others are in danger of going extinct. If salmon disappear, this affects many other species that rely on them like bears, sea lions, eagles and killer whales, as well as rivers, forests and people too. To protect the salmon, we have to protect their homes!



What YOU can do to help salmon!

Here are some things that you, your friends and your family can do to help protect salmon:



• Protect the trees!

The plants and trees that grow alongside streams are important to keep salmon healthy. They help provide shade for salmon eggs and prevent dirt from washing into the rivers. You can get involved in efforts to restore shorelines and rivers.

• Stop water pollution!

Don't ever throw anything marked "toxic" down the drain and never dump oil or other chemicals down storm drains. If these get into streams and rivers, they can make salmon very sick. Always be sure to take them to disposal or recycling facilities. Educate others about water pollution and remind them that what they throw down the storm drain might end up in the river!

• Leave logs and rocks in streams!

Logs and rocks make deep pools in streams where salmon can rest during their long trip. It is important that these are left in streams so that the flow of the river is not too fast.

• Save water!

When we use water it means that less is left in streams for salmon to have a healthy home. Some ways to save water are to make sure that there aren't any leaky taps or toilets in your house, to turn off the water when you brush your teeth, not to run water when you aren't using it and by asking your friends and family to do the same.

• Keep cattle out of streams!

Fences should be used to make sure that cows and other animals do not enter streams where salmon live.



• Conserve electricity!

A lot of dams, which can be harmful to salmon, are built because of our increasing need for power. Save electricity by turning off lights when you leave a room, only running dishwashers and washing machines when they are full and putting on a sweater on chilly days instead of turning up the thermostat.

Eggsposed to Danger!

Being a salmon egg is risky business. Hidden in each of these groups of eggs is a situation that may cause the salmon egg to be harmed! To find out what's happening to put the salmon egg at risk, decode the message by crossing out eggs marked J, Q, X, or Z. Can you think of why this situation might hurt a salmon egg?



Decoded message:



Decoded message:





FOR EDUCATORS



Exciting Wildlife Presentations:

Northwest Wildlife Preservation Society (NWPS) offers a variety of programs for audiences of all ages. These programs allow students to get involved in either interactive classroom presentations or hands-on stewardship programs. Our programs can easily fit into your curriculum, either as part of an existing lesson or as a separate lesson about the environment we all share.

Choose from...

- ~ Bats
- ~ Bears - BC & Beyond
- ~ Endangered At Home
- ~ Owls: Folklore, Fact, & Future
- ~ Urban Wildlife
- ~ Vancouver Island marmot
- ~ Wildcats of BC
- ~ Wildlife of BC
- ~ Wolves

Hands-On Stewardship Programs:

What better way to get your class involved than to “Adopt an Estuary” or “Adopt a Grassland”? Your students can do anything from plant and animal identification or purple loosestrife removal, to water quality testing, invertebrate studies, salmonid studies or even erosion control and trail maintenance. Whatever you choose, your class will have the opportunity to be involved first hand in monitoring and improving the health of our estuaries and grasslands. NWPS will provide a manual to guide you through your work, and the time you contribute and level of involvement you choose is up to you!

Choose from...

- ~ Estuaries
- ~ Grasslands
- ~ Plant Identification & Restoration

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Want to get involved with Wildlife Preservation?

Interested in preserving wildlife and wildlife habitat? Wondering what you can do? Join the Northwest Wildlife Preservation Society “Volunteer Team”! To find out more about possible volunteer opportunities with us, please call (604) 713-6686. There are lots of ways to get involved!



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