

Wildlife Express!

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Chinook

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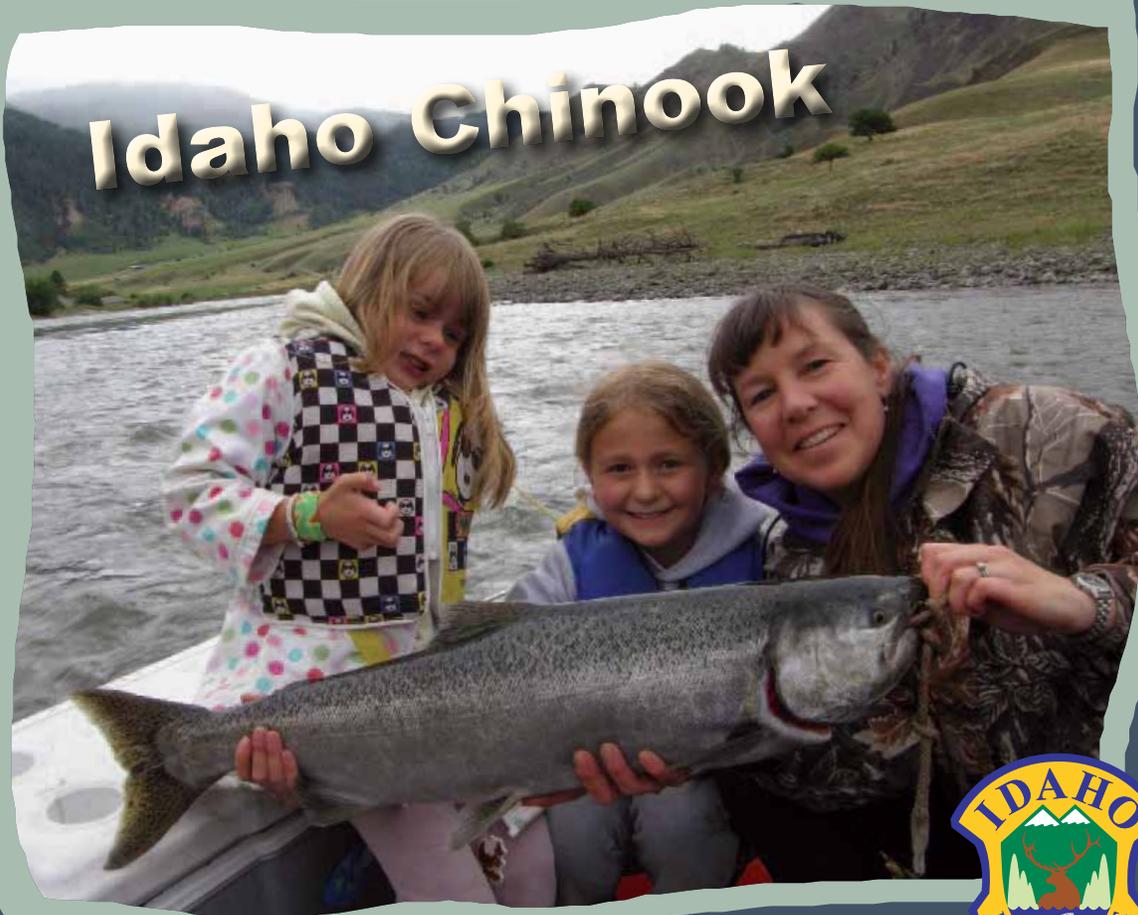


Photo courtesy George Fischer

Let's Talk About



B iologists know the Chinook salmon as *Oncorhynchus tshawytscha* (on-core-ink-us, shaw-weet-sha). It is also known as the “king” salmon, because it is the largest member of the Pacific salmon family. Idaho adult Chinook can range from 18 inches to more than four feet long and weigh over 60 pounds. What’s unique about the Chinook is the gums on the lower jaw are black.

The Chinook salmon begins life as a pea-sized, pinkish-orange egg laid in a gravel nest. In Idaho, Chinook salmon spawn (reproduce) in rivers and streams from August through early November. Female salmon find a spot in the river where the water speed and depth are just right. She then uses her tail like a shovel to dig a nest called a redd. She turns on her side and flips the gravel up off the bottom of the stream. Soon the hole is more than a foot deep and ready for her eggs.

A male salmon will “encourage” the female to lay her eggs by swimming beside her, often gently brushing against her. The female may lay from 4,500 to 6,500 eggs into the redd. As the female releases the eggs, the male releases a substance called milt that fertilizes the eggs and allows them to grow. The female then moves upstream and once again uses her tail to kick up more gravel. The water current carries the gravel into the redd. The gravel covers and protects the eggs. Any smaller and lighter mud (silt) or sand in the stream bottom is carried past the redd. This is important. Silt and sand could smother the eggs, which need oxygen from the water. Although the adult salmon die after spawning, they have accomplished their

mission; the next generation of salmon is in the gravel.

The eggs develop in the gravel for a few months before they hatch into tiny fish. These baby fish, about one inch long are called sac fry, or alevins (al-vins). They have a yolk sac attached to their bellies. The yolk sac feeds them until they are able to feed themselves. In early spring, the yolk sac is gone. The young Chinook are now called fry. Over the next year, these small fry live in the river feeding, hiding, and growing until they are four or five inches long.

The following spring one-year old Chinook, now called smolts, ride the river currents to the ocean - backwards. Yes, backwards. They are small in size and do not have the energy to swim. They ride the current to the ocean as far as 900 miles in just a few weeks. During this time, their bodies are changing for life in the salty ocean.

Chinook live in the ocean for one to three years. They eat and grow before beginning the return trip to the river where they were born. Returning back to Idaho from the ocean is an uphill trip against the current. As adults, salmon are big, sleek and strong, so they are well equipped for this journey. All the food in the ocean has allowed them to grow 30, 40, even more than 50 pounds of pure muscle!

When they arrive back at their home, females begin the cycle all over again. They dig redds and lay their eggs. The males provide milt to fertilize the eggs. Then the adult Chinook die, but their young hatch, grow, and in a year or so, migrate to the ocean and continue the circle of life.

Salmon's Ancestors

Have you ever made a family tree? It can be fun to discover relatives and past ancestors. With a little research and hard work, you may be able to trace back your ancestors for hundreds of years.

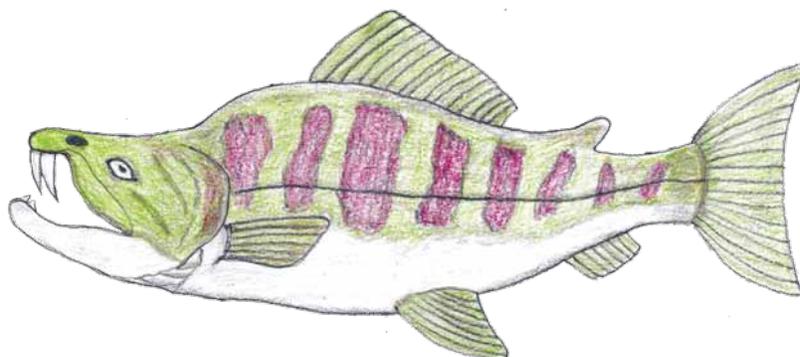
Scientists can trace back the ancestors of animals, too. One way is to look at fossils. Salmon are incredible fish. They travel long distances and can live in both fresh and saltwater. How did such a fish come to be? By looking at fossils, scientists try to answer questions like these. They try to discover salmon's ancestors.

Fossils of the earliest salmon were discovered in British Columbia, Canada. This salmon lived in lakes 40 to 50 million years ago! They lived in lakes because the oceans were much warmer then than they are now. The colder lakes had more food than the warmer oceans. You would not have recognized Idaho at this time. The states of Washington, Oregon and California were at the bottom of the ocean. Idaho was beach-front property! About 25 million years ago, the oceans began to cool. This was most likely the time when salmon started traveling between freshwater and saltwater.

A salmon that likely lived in rivers and the ocean was the saber-toothed salmon. It lived 10 to 15

million years ago. Fossils of this salmon have been found in the Owyhee River Canyon. The saber-toothed salmon was huge. Some fossils have measured close to eight feet! Scientists think this salmon may have weighed over 400 pounds. The saber-toothed salmon had something in common with the saber-toothed tiger – fangs! It had two enormous, curved teeth. It may have looked frightening, but its large fangs were probably not for catching prey. The skull bones show that the saber-toothed salmon was a filter feeder. It ate plankton. Plankton are tiny microscopic plants and animals. The huge teeth were most likely used to attract mates and fight for the best spawning grounds.

During the time of the saber-toothed salmon, the land was changing. Volcanoes erupted. The ocean floor rose up to create the coast line we see today. Rivers and lakes changed. Salmon had to be strong and tough fish to survive. They had to adjust and adapt. It took 10 million years of change and growth to get the salmon we have today. Two million years ago salmon in the Pacific Northwest looked very similar to today's salmon. It's hard to imagine that on a branch of the Chinook's family tree is an enormous fish with saber-like teeth!



Take Me Salmon Fishing



Salmon fishing is one of the greatest fishing adventures you can enjoy here in Idaho. Most salmon weigh in at 12 – 20 pounds, but 30-pound fish are not uncommon. Imagine the big fish story you would have catching one of those fish!

Chinook salmon fishing season begins on September 1 in parts of the Snake River and lower Clearwater River. If you want to fish for salmon make it a family fishing trip. Not only will your



Photo courtesy Travis Oakes

family enjoy the chance to share time outside, you will be glad to have an adult around if you catch a salmon. These fish are incredibly strong and even grown-up anglers can have a tough time landing one of these big fish. Remembering to bring a big net will help you successfully land your salmon.

Fishing for salmon requires patience. Remember, migrating salmon are not eating, so they won't strike your lure or bait because they are hungry. Your job is to tempt them to strike by dropping something smelly or brightly colored in front of their nose. Anglers often use salmon eggs or brightly-colored lures. You can also make tuna balls by putting a little bit of tuna in some nylon mesh and putting that on your hook. Keep your eye on your rod tip and be ready to hang on-----no daydreaming when you are salmon fishing!

If you want to give salmon fishing a try, be sure to carefully read the regulations. Have a parent read them with you to make sure you know what you need to do and exactly where you can fish. If you have questions, call your regional Fish and Game office. Then, get your gear together and go outside to catch a big fish story!

What Happened to Idaho Salmon?

Chinook salmon and its cousins, sockeye, coho, and steelhead were once plentiful in Idaho. They used to roam all of the Clearwater River and Salmon River, and the Snake River up to Shoshone Falls near Twin Falls. Shoshone Falls was just too tall for the salmon to jump. There were even salmon that passed through Idaho into Nevada.

Once there were millions of salmon. In the early 1800s, when Lewis and Clark made their way to the West coast, there were two to six million adult salmon swimming up the Columbia River. Many were headed back to Idaho to spawn. It had been that way for 10,000 years. Now, coho salmon are extinct, and the others - sockeye, Chinook, and steelhead are at risk of extinction.

What happened?

Salmon numbers have always gone up and down. Many things affect the survival of salmon. Overfishing, loss of habitat and predators have all played a role in lowering salmon numbers. The main reason salmon numbers have dropped are dams. People built dams along the lower Snake and Columbia Rivers. Dams make traveling

between Idaho and the Pacific Ocean difficult. Smolts traveling to the ocean have the hardest time.

What are some things Idaho Fish and Game is doing to help salmon?

- We make sure salmon habitat in Idaho is healthy. Salmon need clean, cold and connected rivers and streams. Along the rivers' banks, there also needs to be healthy plants.
- We grow hatchery fish for anglers to catch. This keeps the strong, wild fish in the wild to spawn in our rivers.

What can you do?

- Keep Idaho streams and rivers healthy with native plants along the banks and clean unpolluted water.
- Learn more about salmon and why they are important to people in Idaho and tell others.
- Conserve water when possible to leave water in our streams and rivers for salmon and other wildlife.

Five Fingers for Five Salmon

The Pacific Ocean is home to five species or kinds of salmon – chum, sockeye, Chinook, coho and pink.

Idaho once had three species that lived here – coho, Chinook and sockeye. Coho are now gone from Idaho, but we still have Chinook and sockeye.

Here is an easy and fun way to learn and remember the names of the five salmon that live in the Pacific Ocean – use your hand as a guide! The thumb stands for chum. Use your pointer finger to sock your eye (sockeye). The largest finger is the king or Chinook. Coho is the ring finger. Pink, the smallest salmon, is the pinkie. Now whenever you want to remember the names of the five Pacific salmon, all you have to do is look at your hand!



Let's Cook Up Some Salmon!

Cooking and eating salmon can be just as fun as catching them. Salmon is very tasty and also good for you! Here are some ideas and recipes that will help you cook up some great salmon.

Your salmon will taste its best only if you care for it properly after you catch it. Many people will leave the fish they catch on a stringer in the water. This may seem like a good idea, but it may spoil your fish and make it mushy. The best thing to do is put your fish in a cooler full of ice and clean your fish as soon as possible. Cook your fish within two days after you catch it or freeze it. Fish will keep in the freezer for three to six months if vacuum packed or frozen in water in a zip top freezer bag. Here are some recipes to try. Happy cooking!

Marinated Grilled Salmon

4 salmon steaks, cut $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches thick

In a shallow baking dish combine:

$\frac{1}{4}$ cup oil

$\frac{1}{4}$ cup soy sauce

3 Tablespoons parsley

2 cloves minced garlic

$\frac{1}{2}$ of a lemon cut in slices

Pepper

Place salmon in mixture and marinate 30 minutes to 1 hour. Remove fish and pat dry with paper towel. Save marinade to brush on fish while grilling. Grill salmon over medium-hot coals for 6-8 minutes. Turn and grill another 6-8 minutes more until salmon flakes easily. Serves four

Oven Baked Salmon

8 orange slices

4 salmon fillets

Salt and pepper

2 tablespoons sun-dried tomatoes in oil, plus 1 tablespoon oil from jar

2 tablespoons fresh chopped dill

$\frac{2}{3}$ cup vegetable broth

Preheat oven to 375 degrees.

Place orange slices in the bottom of a 13 x 9 inch baking dish. Place salmon fillets on top on orange slices and sprinkle with salt and pepper. Chop 2 tablespoons sun-dried tomatoes and place in a bowl; mix in dill and 1 tablespoon of oil from tomato jar. Spoon this mixture evenly over salmon fillets and sprinkle with vegetable broth. Bake for 8 – 10 minutes until salmon flakes when poked with fork.

What's a Fish?

Fish are vertebrates. They have backbones, just like you. Fish also breathe through gills, have fins and live in water. That seems pretty simple, right? Well, in nature things aren't always as simple as we would like.

Take the backbone for example. We know what our backbone is like, but in the fish world, not all backbones are created equal. Sharks and sturgeon have a backbone made of the same stuff that supports your nose and ears! It is called cartilage. Cartilage is not hard at all!

Fish need oxygen to survive. Most fish have a special way to get oxygen out of the water they live in – gills. Water, with oxygen in it, passes over the gills when the fish swims. The skin on the gills is thin. Oxygen can pass through the skin into the fish's bloodstream.

Does this mean that all fish use gills to get the oxygen they need? No, some fish actually have lungs! In fact, the African lungfish needs to breathe air above the water's surface. It will "drown" if held under water for too long. The Australian lungfish can survive out of water for months if it is in a wet burrow. Lungfishes are examples of fish that break the "gill rule."

We usually think of fish as having fins on each side of their bodies, but what about lampreys? Lampreys look like eels. They don't have paired fins or jaws, but they are still fish. Lampreys were some of the first freshwater fish to appear on Earth.

As you can see, a simple job like defining what a fish is, is not so simple. Fish have been a part of our planet for at least 450 million years. There are over 20,000 different species or kinds of fish worldwide. Over time, they have adapted to many underwater (and even out of water) habitats.

Salmon – A Keystone Species

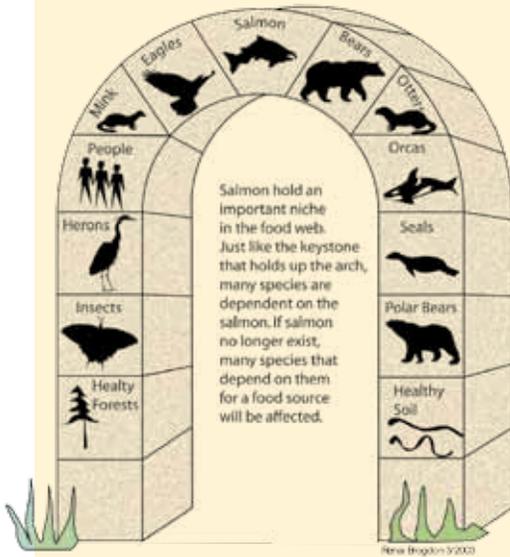
Salmon in the Pacific Northwest are considered a keystone species because so many animals depend on them. A keystone is the stone at the top of an arch. It supports the other

stones and keeps the whole arch from falling. Salmon are like the top stone. They keep communities of plants and animals in balance. If salmon disappear, other animals are at risk of extinction as well.

Salmon support more than 100 different kinds of animals. Eagles, bears, otters, orca whales, and people are just some of the animals that depend on salmon. Salmon are important food or “prey” for many animals. They also move nutrients between the Pacific Ocean and Idaho’s freshwater. How do they do this? Well, salmon die after they spawn. As they decompose, their bodies are eaten by tiny little animals called microorganisms. These tiny animals become food for small fish, like baby salmon.

Salmon nutrients also “feed” plants. Animals like bears, otters, and osprey drag salmon into the woods to eat them. Some parts of the salmon will be left behind to decay and become part of the soil. Their bodies bring nutrients to the soil that is used by plants. Salmon are the only way to move nutrients from the ocean to Idaho. Think about it. All day, every day, Idaho’s rivers carry nutrients to the ocean. The fewer wild salmon that come back to Idaho every year, the more it is a one-way trip for these essential nutrients.

What kinds of other keystone species do we have on earth? See if you can think of one. We have many keystone species, and some have yet to be discovered.



Fishing for Chinook?

Fishing for Chinook salmon can be very fun and challenging. A Chinook salmon is one of the largest fish you may ever catch in Idaho. You may be wondering how people are allowed to fish for Chinook since they are a threatened animal. We are allowed to fish for Chinook because not all of our salmon are wild salmon.

When dams were built along the Snake and Columbia Rivers, scientists knew the dams would affect salmon. They thought the dams might lower salmon numbers. To replace these fish so people would have Chinook to catch, hatcheries were built to raise salmon. The salmon are raised in hatcheries and released into the rivers when they are smolts. They travel to the ocean and then come back to Idaho to spawn. Anglers are allowed to catch and keep salmon raised in a hatchery but are not allowed to keep wild fish.

How do anglers know if a salmon is wild or from a hatchery? They look to see if the fish has an

adipose fin. This small fin is found on the fish’s back right in front of the tail. A hatchery fish will not have an adipose fin. It is clipped off before the fish is put into the river.

The small Chinook are placed into a container of water with medicine. The medicine makes the fish “fall asleep.” If you have ever held a live, wiggling fish, you know how slippery they can be! With the fish asleep, the fin can be snipped off. The adipose fin has no bones. It is just fat, so cutting the fin off is easy. When the fish is put in plain water, it wakes up and is released into the river.

Anglers know that if they catch a Chinook with an adipose fin, the fish must be released unharmed. It is wild and is protected. If the fish doesn’t have an adipose fin, it was raised in a hatchery and may be kept. Hatchery fish are the reason we are still allowed to catch Chinook salmon. Without these fish, we would not have the pleasure of catching and eating these amazing fish.

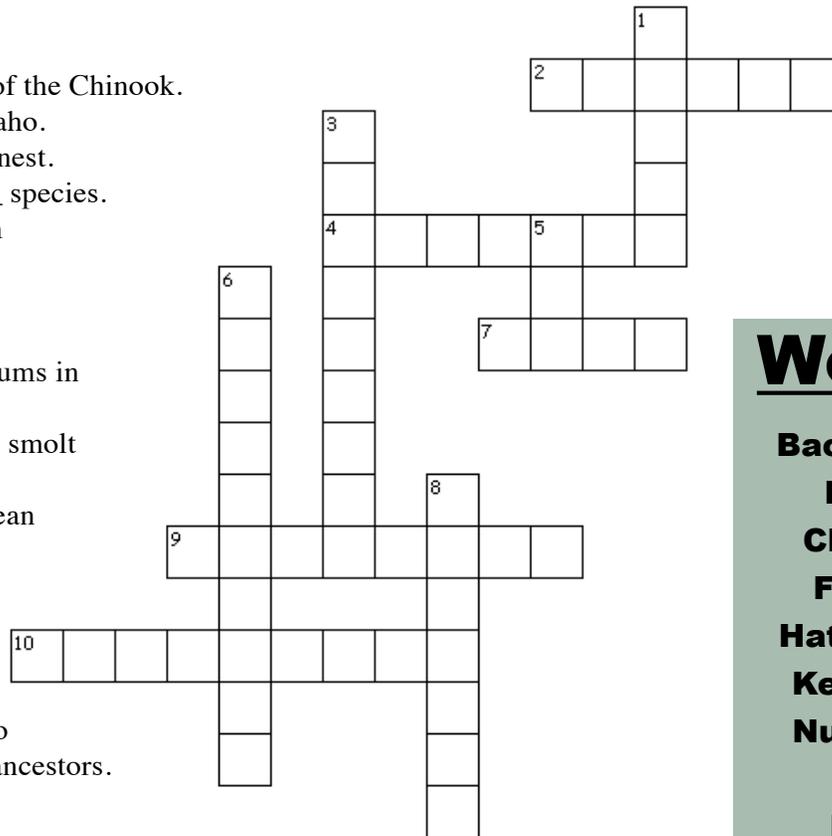
Chinook Crossword

Across

2. The saber-toothed _____ is a relative of the Chinook.
4. The largest salmon in Idaho.
7. The name of a salmon's nest.
9. Salmon are a _____ species.
10. Salmon move these from the ocean to Idaho.

Down

1. This is the color of the gums in a Chinook's mouth.
3. This is the way a salmon smolt travels to the ocean.
5. Chinook travel to the ocean when they are _____ year old.
6. Anglers are only allowed to keep salmon that were raised in these.
8. Scientists look at these to learn about an animal's ancestors.



Words

Backwards
Black
Chinook
Fossils
Hatcheries
Keystone
Nutrients
One
Redd
Salmon

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