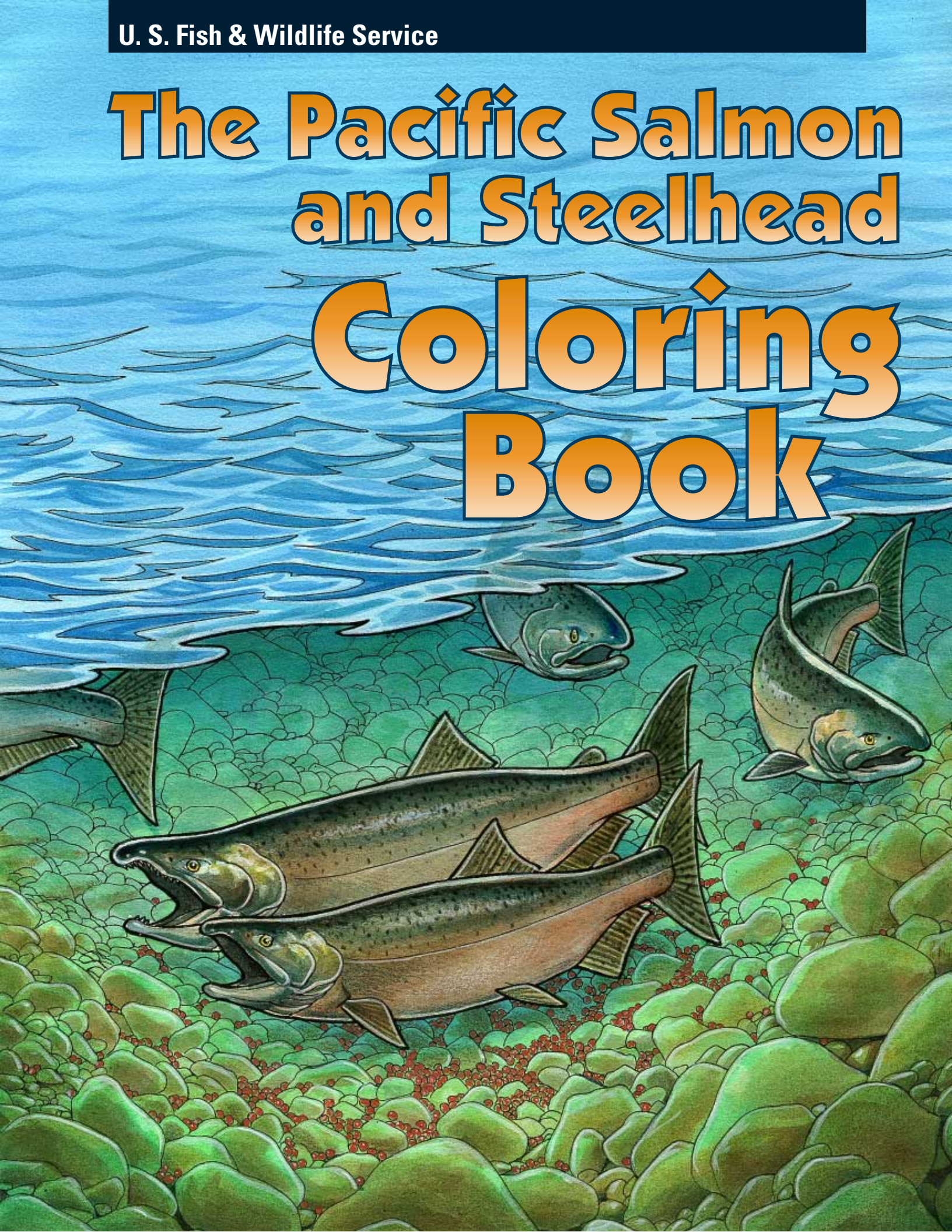
U. S. Fish & Wildlife Service

The Pacific Salmon and Steelhead Coloring Book



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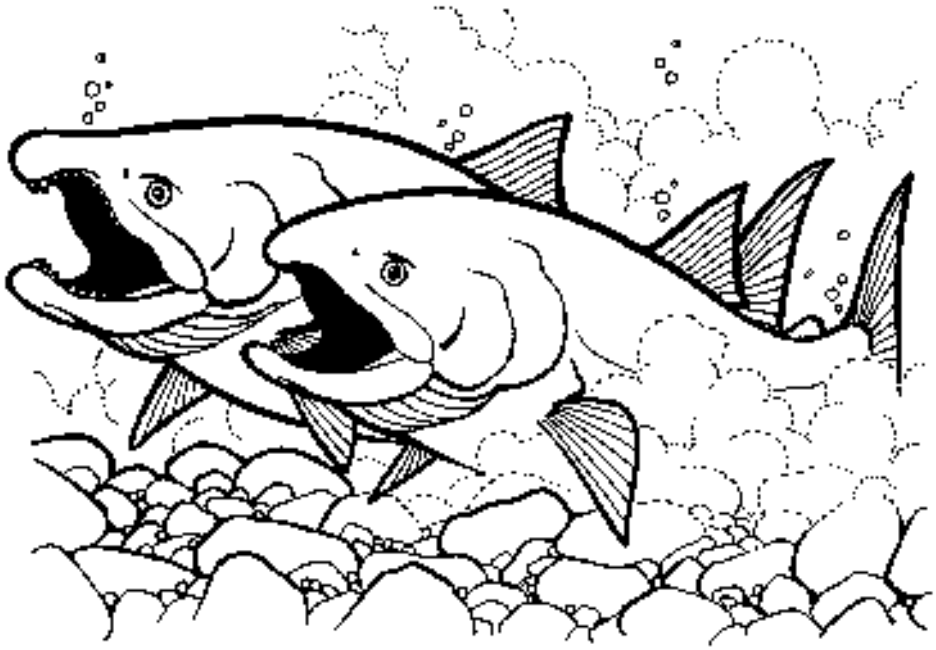
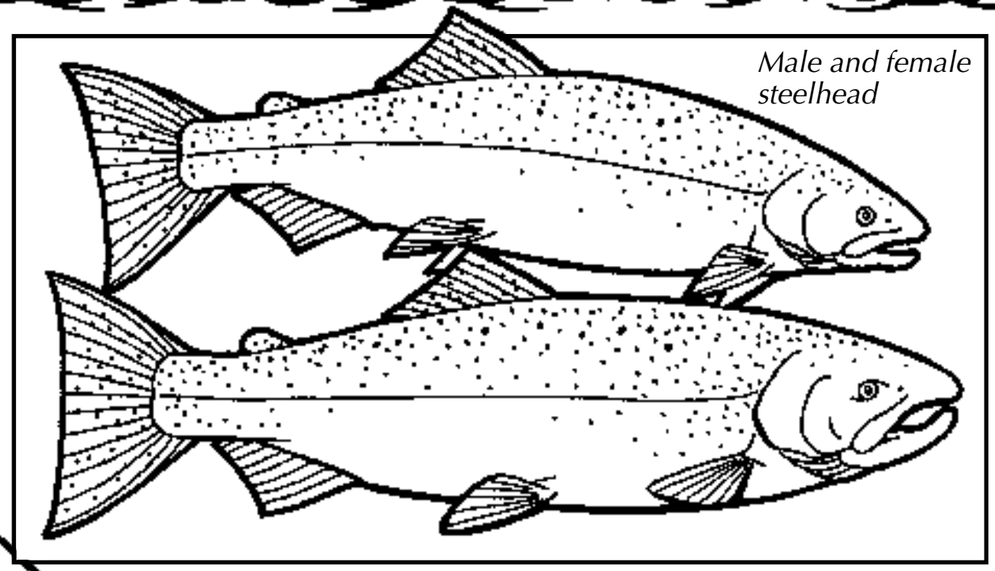


Produced By
U.S. Fish and Wildlife Service
Pacific Region

Illustrations by Gary Whitley

Special thanks to the Sacramento Fish and Wildlife Office's
Central Valley Improvement Act Division for their assistance with this project.

What Is a Salmon?



Male and female steelhead

Male and female chinook salmon

Salmon are fish that live part of their lives in fresh water, and part in the ocean. They hatch in a stream, live there for several months, and then swim to the sea, where they grow up. Then they migrate back to the streams where they were born, to lay their eggs.

Five kinds of salmon live in rivers along the Pacific Coast: the **chinook** (or king) salmon, the **coho** (or silver) salmon, the **sockeye**, **pink** (or humpback), and **chum** (or dog) salmon. Chinook are the biggest. Some can weigh over 100 pounds! Pink salmon are the smallest, at 3 to 5 pounds.

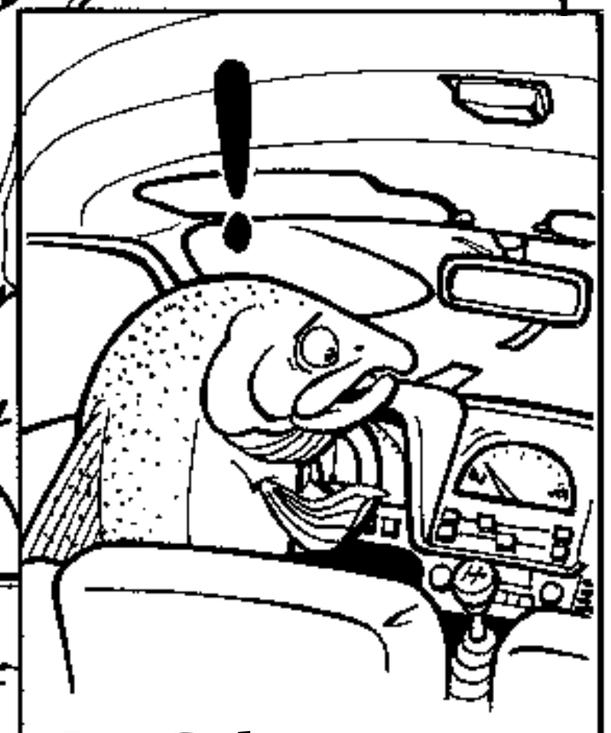
Steelhead are a kind of rainbow trout that migrate to the sea, like salmon. They are slimmer than salmon, and their tail fins have a more square shape.

Migration

Salmon Follow Their Senses!

Have you ever visited another city, and noticed that the water there tastes different from the water at home? Salmon can tell the difference between water from different places too! Young salmon memorize the smell of their home stream before they migrate to the sea. When they are ready to return to fresh water, they follow the smell home.

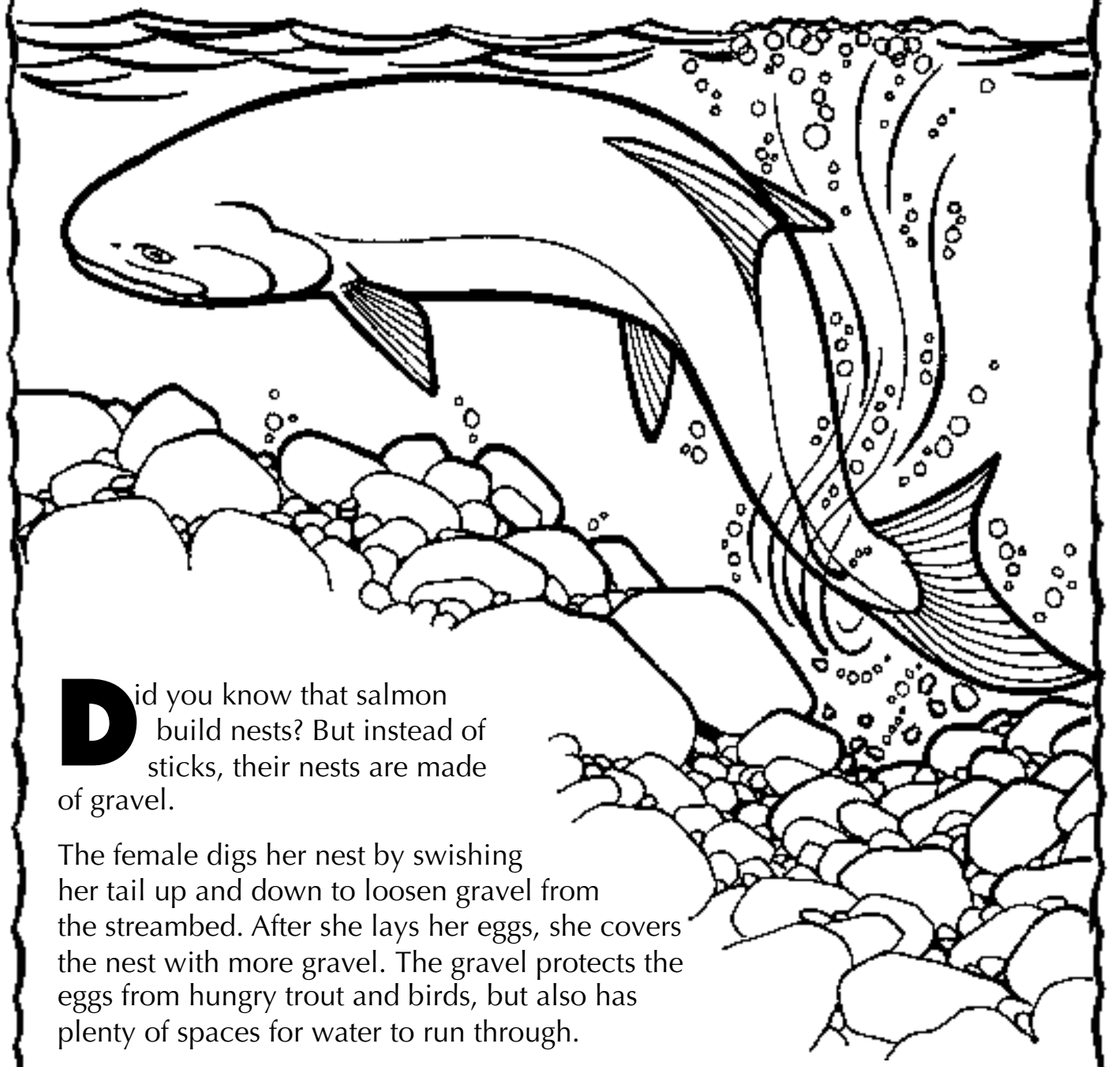
As the salmon migrate from the ocean to their home streams, their color and shape changes. Males get hooked jaws with sharp teeth. In some species, their backs get humps. Both males and females change color.



For Salmon, Fat is Where It's At

When they're living in the ocean, salmon eat a lot to store up plenty of fat. This fat is the "fuel" they need to get to their spawning grounds. Once salmon enter freshwater, they stop eating. So a salmon is a lot like a car that must make a long trip on one tank of gas. If anything delays the salmon, they may use up their fuel too soon — and not have enough to make it home.

Building a Nest

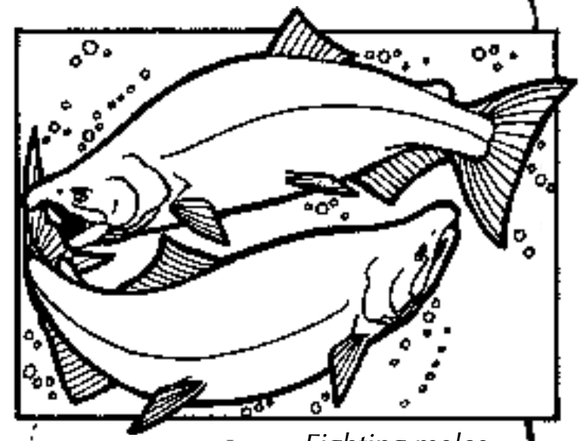


Did you know that salmon build nests? But instead of sticks, their nests are made of gravel.

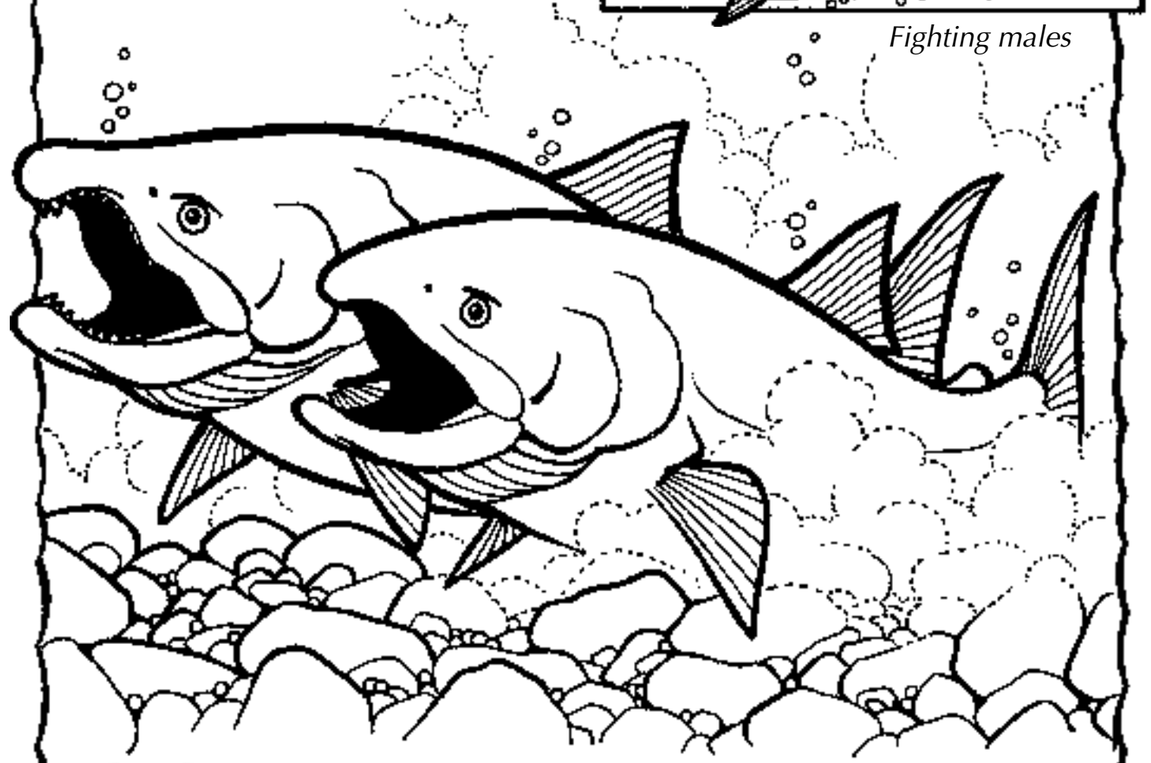
The female digs her nest by swishing her tail up and down to loosen gravel from the streambed. After she lays her eggs, she covers the nest with more gravel. The gravel protects the eggs from hungry trout and birds, but also has plenty of spaces for water to run through.

A big female chinook can lay over 7000 bright red, pea-sized eggs!

Spawning

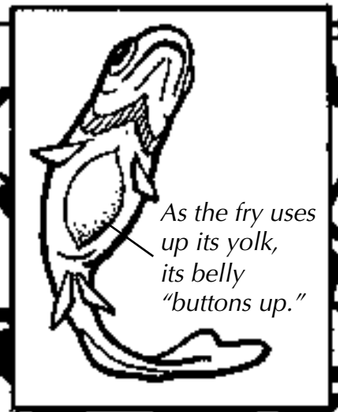


Fighting males



While the female salmon is building her nest, the male is busy chasing off all other males. He also does a courtship "dance:" he quivers and swims back and forth over the female's back. When the female is ready to lay her eggs, he moves alongside her and fertilizes them. This is called **spawning.** All salmon, and most steelhead, die after they spawn.

Hatching

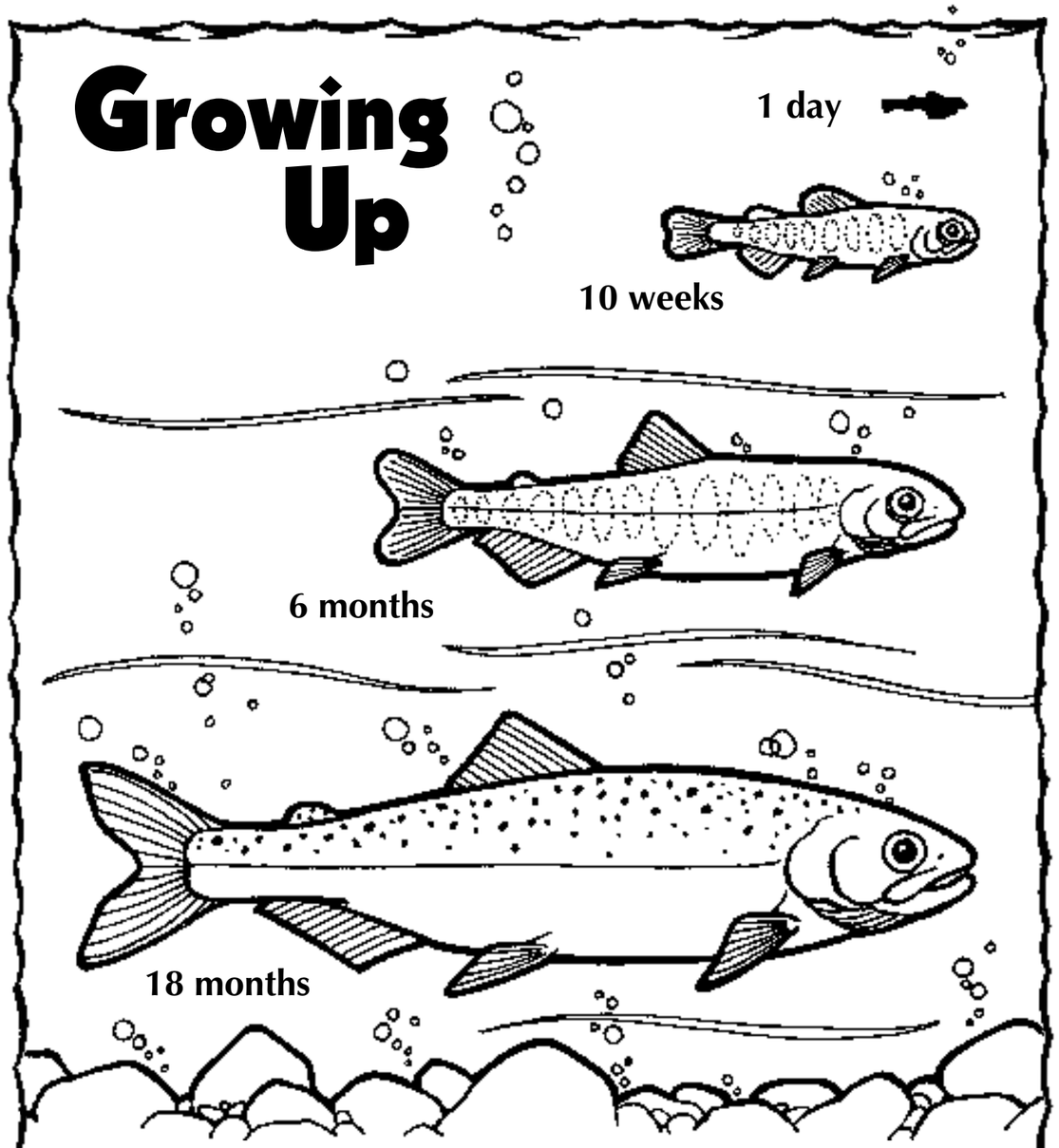


As the fry uses up its yolk, its belly "buttons up."

Actual Size
- Egg
- Newly hatched salmon

Late in the winter, the baby salmon hatch. They are weird looking, with huge eyes and a pouch full of egg yolk attached to their bellies. You can see their hearts pumping through their transparent skin! For a few weeks they stay hidden in the gravel, living off their egg yolk. As the yolk gets used up, the pouch shrinks and then disappears. Scientists call this "buttoning up."

Growing Up



Once the yolk is gone, the baby salmon, called **fry,** get hungry, and leave their gravel nests. They will eat anything that floats by, but insects are their favorite! Chum, pink, and sockeye fry migrate to the sea soon after leaving the nest, but young chinook salmon, coho salmon, and steelhead spend 4 to 18 months living in streams.

Life in the Stream

A stream is a much safer place for a young salmon than the sea, but there are still many challenges. Birds, frogs, mammals, and other fish eat salmon fry. Floods can wash fry out of streams and into the big rivers before they are ready to migrate.

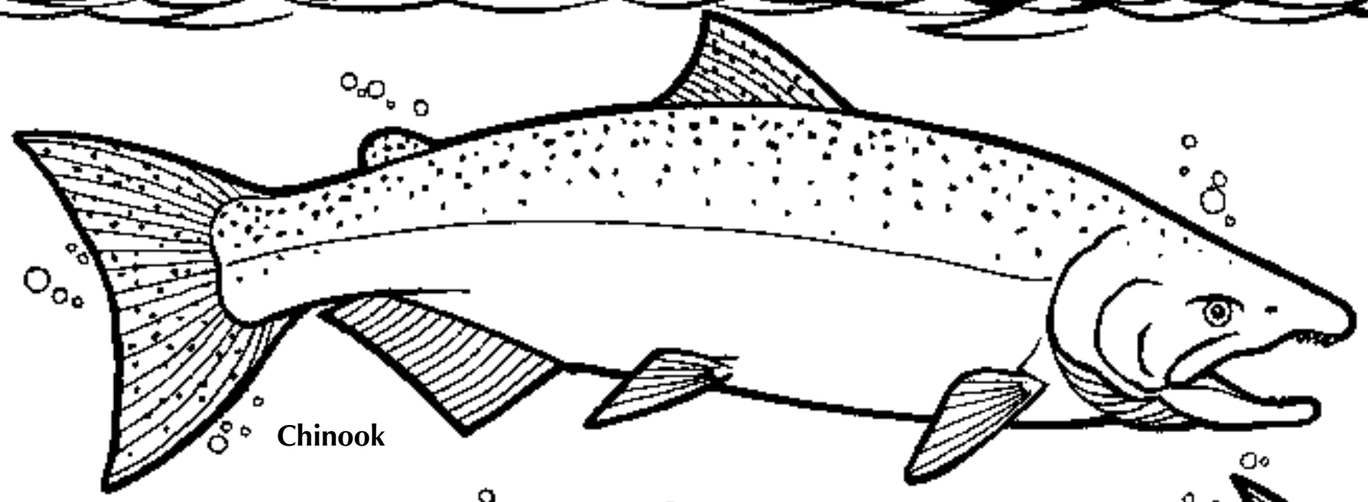
People also can create problems for salmon fry. Our dams change the amount of water that flows in streams and rivers. Sometimes there may be too much water, and sometimes there may not be enough. In summer, streams may even dry up completely. When you conserve water you may be helping a young salmon survive!

Why Do Salmon Need Trees?

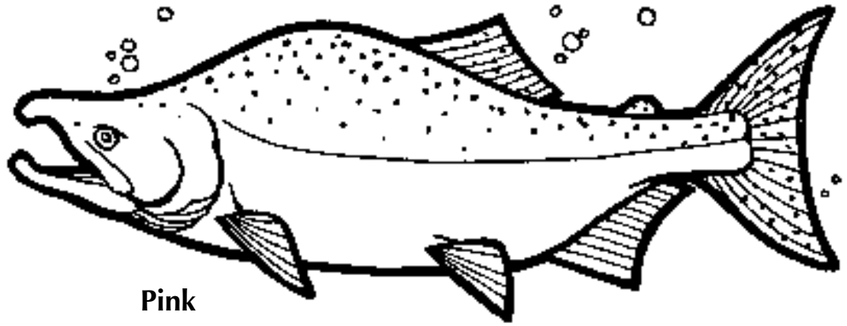
Trees provide people with wood for our houses, paper for our books, and good things to eat, like nuts and fruit. But did you know that trees are just as important to salmon?

Trees help keep water clean. They hold the soil and keep rain from washing it into rivers. Their roots absorb water, helping to prevent floods. Their shade keeps water from getting too hot in the summer. Their leaves provide food for insects that are eaten by salmon fry. And, when old trees fall into streams, they create safe hiding places for the fry.

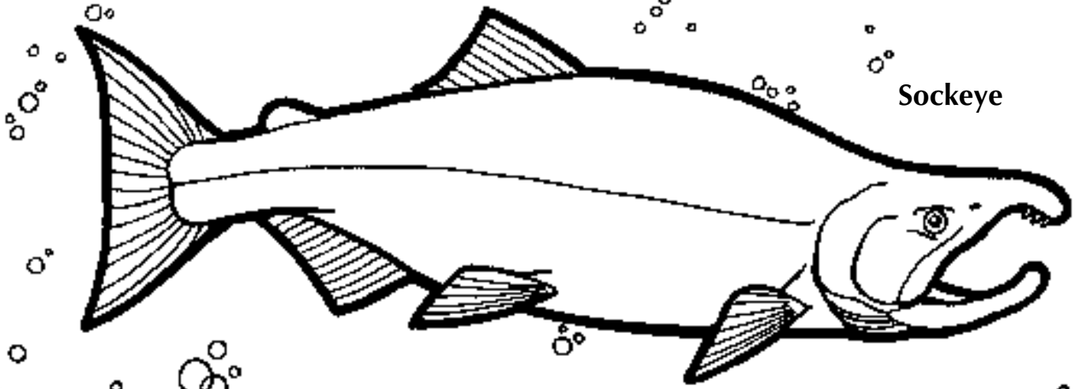
Pacific Salmon



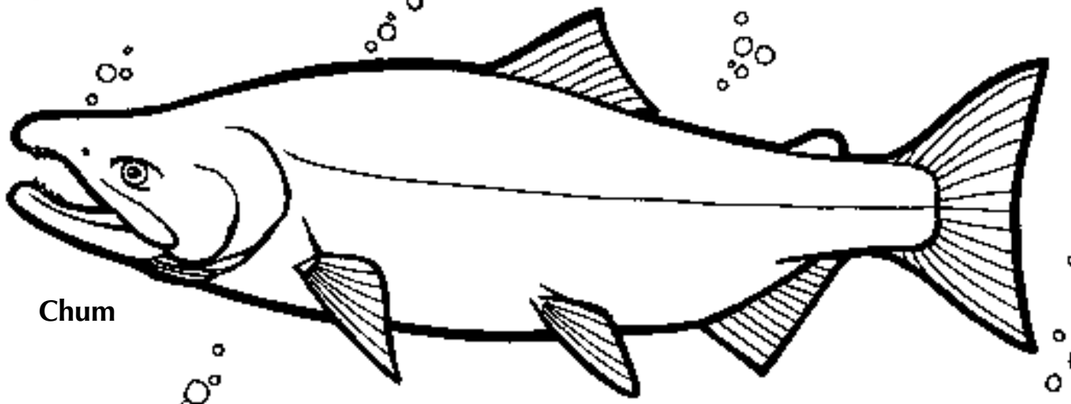
Chinook



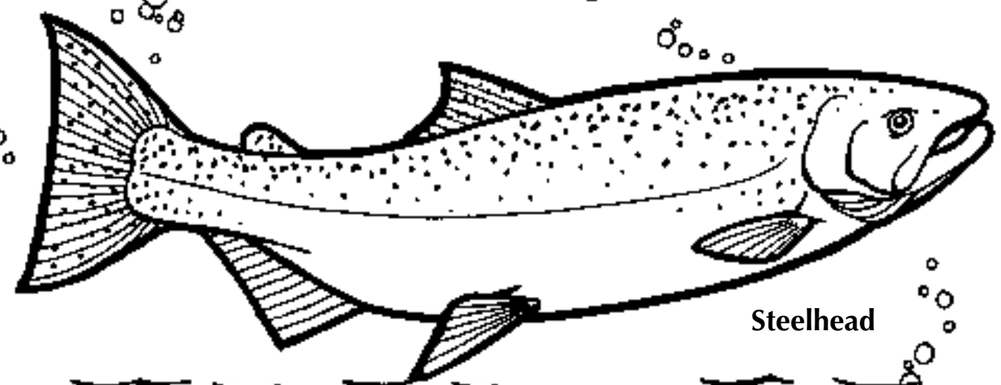
Pink



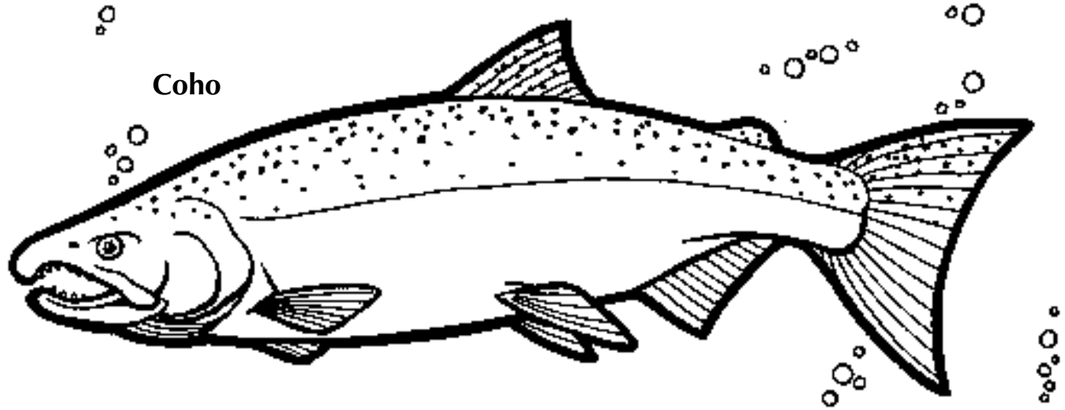
Sockeye



Chum

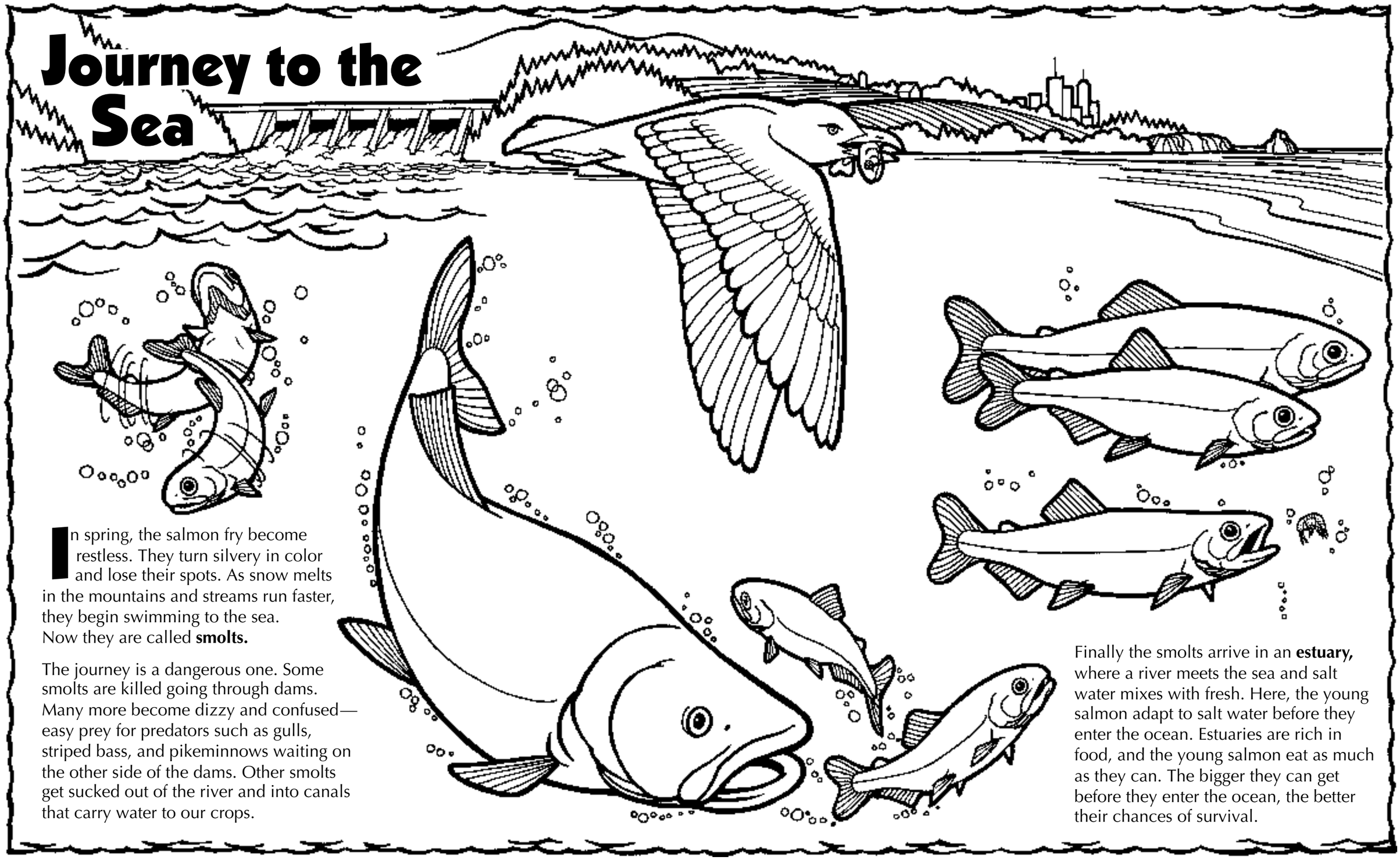


Steelhead



Coho

Journey to the Sea

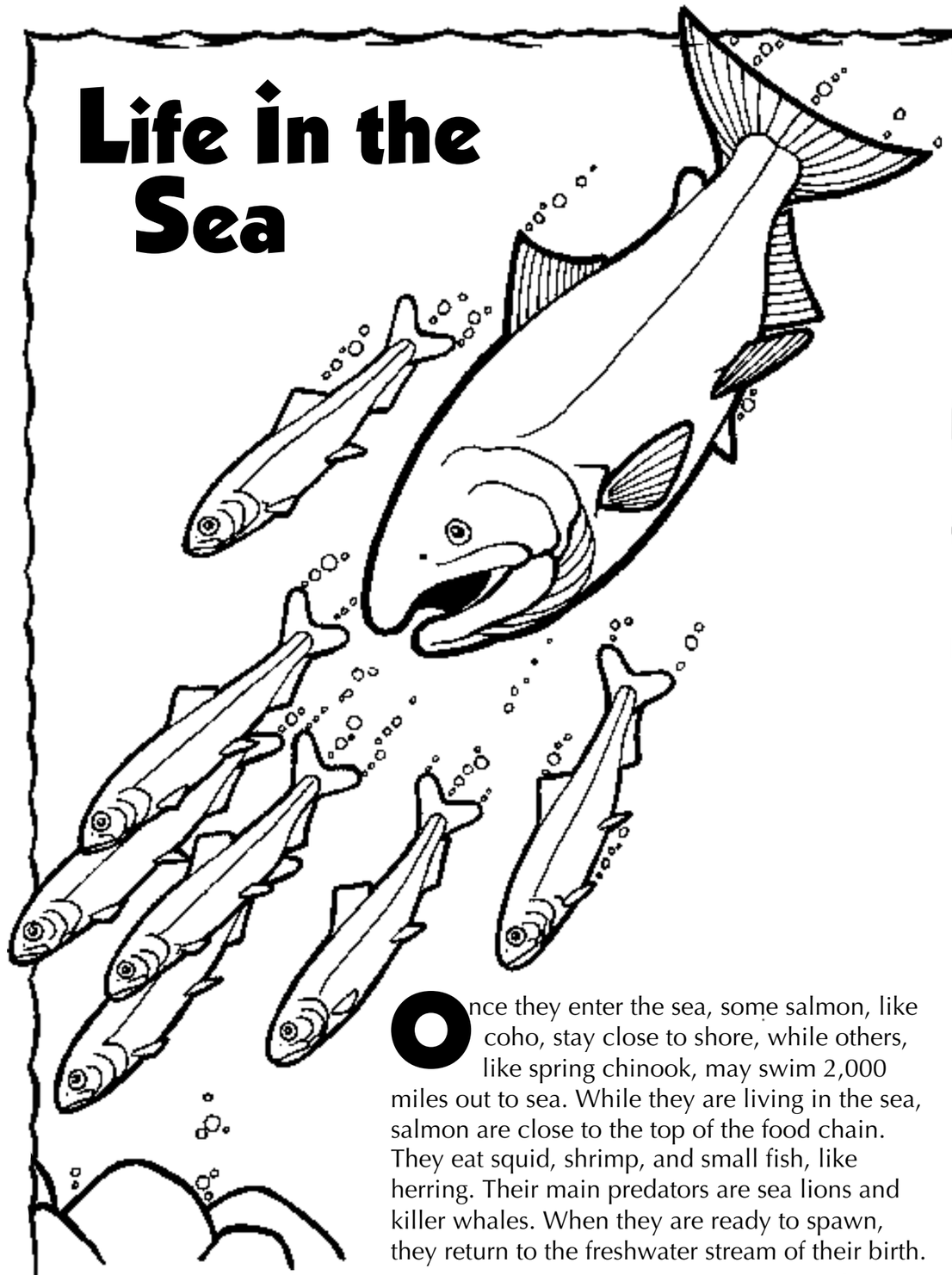


In spring, the salmon fry become restless. They turn silvery in color and lose their spots. As snow melts in the mountains and streams run faster, they begin swimming to the sea. Now they are called **smolts.**

The journey is a dangerous one. Some smolts are killed going through dams. Many more become dizzy and confused—easy prey for predators such as gulls, striped bass, and pikeminnows waiting on the other side of the dams. Other smolts get sucked out of the river and into canals that carry water to our crops.

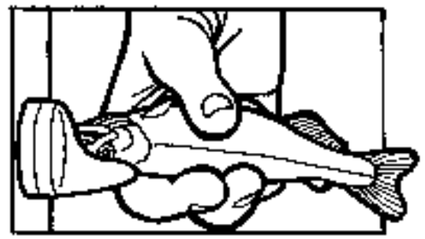
Finally the smolts arrive in an **estuary,** where a river meets the sea and salt water mixes with fresh. Here, the young salmon adapt to salt water before they enter the ocean. Estuaries are rich in food, and the young salmon eat as much as they can. The bigger they can get before they enter the ocean, the better their chances of survival.

Life in the Sea

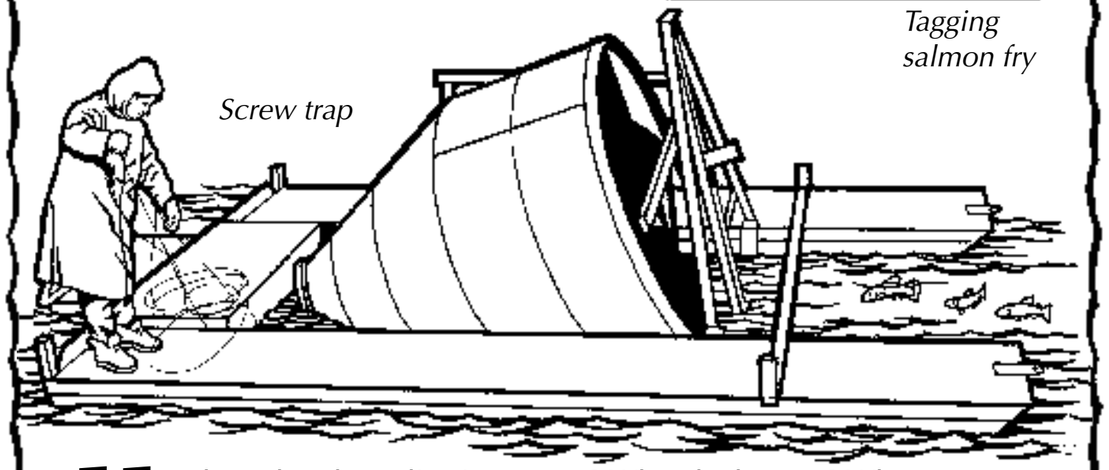


Once they enter the sea, some salmon, like coho, stay close to shore, while others, like spring chinook, may swim 2,000 miles out to sea. While they are living in the sea, salmon are close to the top of the food chain. They eat squid, shrimp, and small fish, like herring. Their main predators are sea lions and killer whales. When they are ready to spawn, they return to the freshwater stream of their birth.

Discovering Secrets of Salmon



Tagging salmon fry



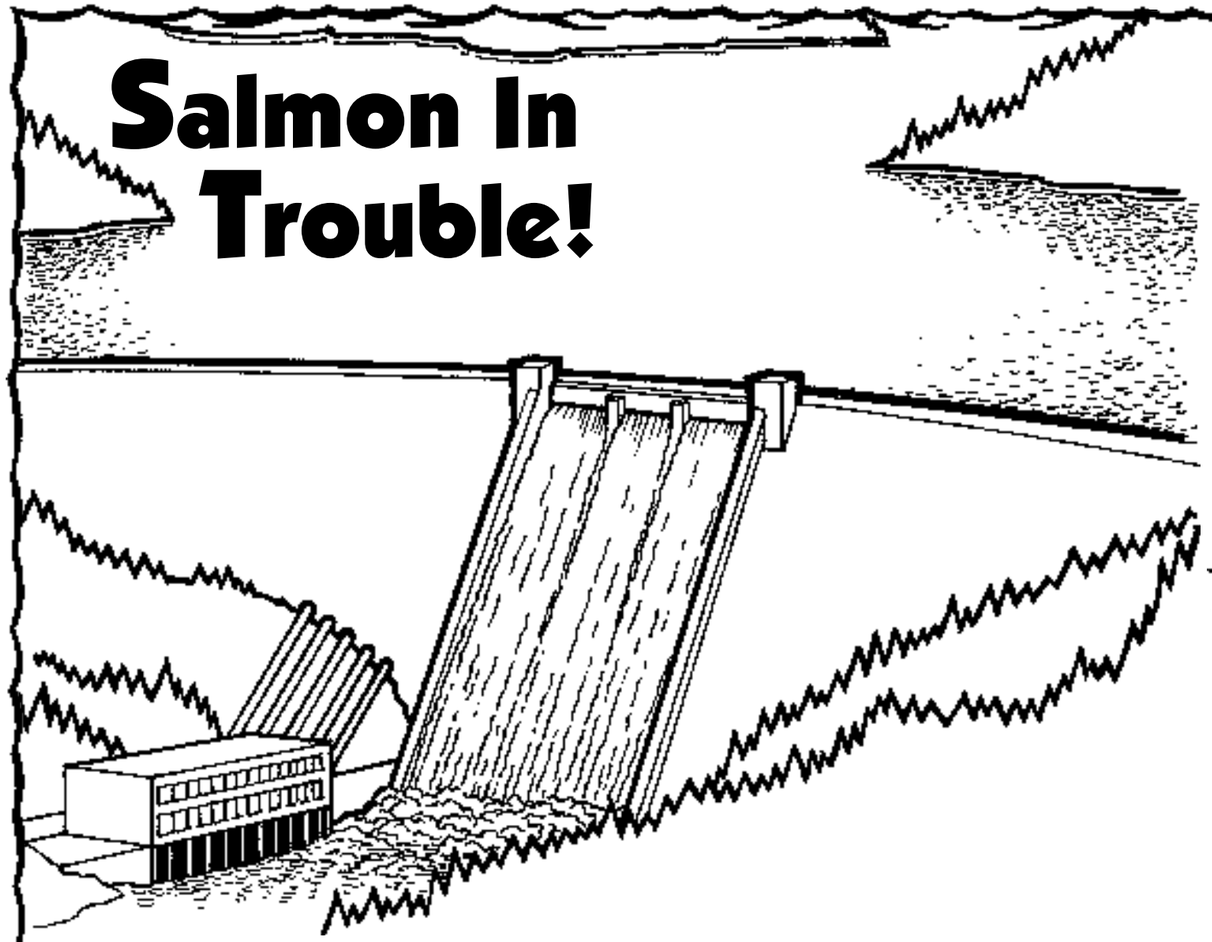
Screw trap

How long do salmon live in streams? What do they eat? Who eats them? Where do they go in the ocean and how long do they stay there? How many survive to adulthood? These are some of the questions that scientists try to answer. When we know what salmon need, we can help them better.

One way we learn about salmon is by tagging them. Some hatchery fish are given **coded wire tags.** A special machine is used to put a tag in the fish's snout. When the fish is caught as an adult, the tag is removed and read under a microscope. The pattern of lines on the tag tells when and where the fish was released.

Salmon also get "check-ups" by scientists using special live traps called **screw traps.** These traps (which look like space capsules!) are placed in rivers to catch passing salmon. Scientists study the salmon, and then return them to the water. Ocean and estuary "check-ups" are done using nets which trail behind boats.

Salmon In Trouble!



Today, many kinds of salmon, and steelhead, are disappearing. Some have even been listed as endangered species. Salmon are in trouble mostly because their **habitats** — the places where they live — are in trouble.

Some rivers have been blocked by dams. Dams have helped people by providing us with electricity and a way to store water. But dams have been hard on salmon. Some dams block salmon from getting to rivers where they used to spawn. Gravel that salmon need to build nests gets stuck behind these dams.

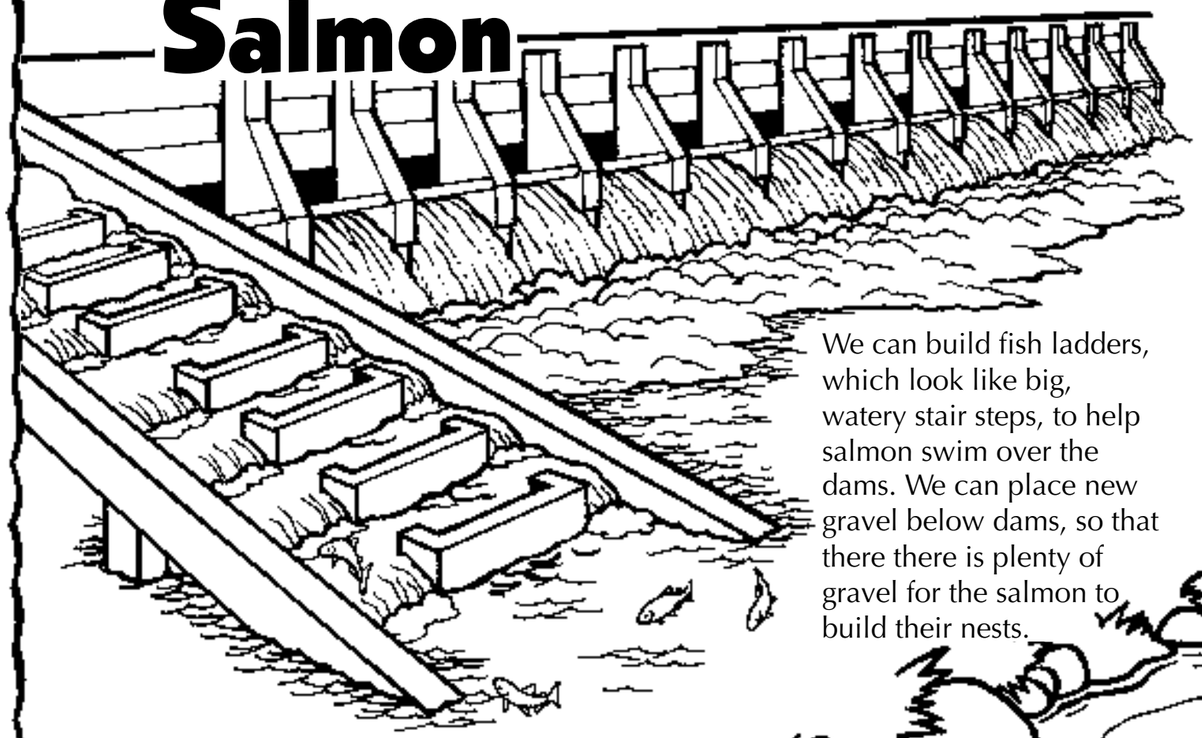
Other dams have turned rivers into huge lakes — perfect habitat for predatory fish. Without strong currents, young salmon have to work harder to swim to the sea. Salmon also use up a lot of energy as they try to find their way past the dams.

Other rivers are too warm, muddy, or polluted for salmon to use.

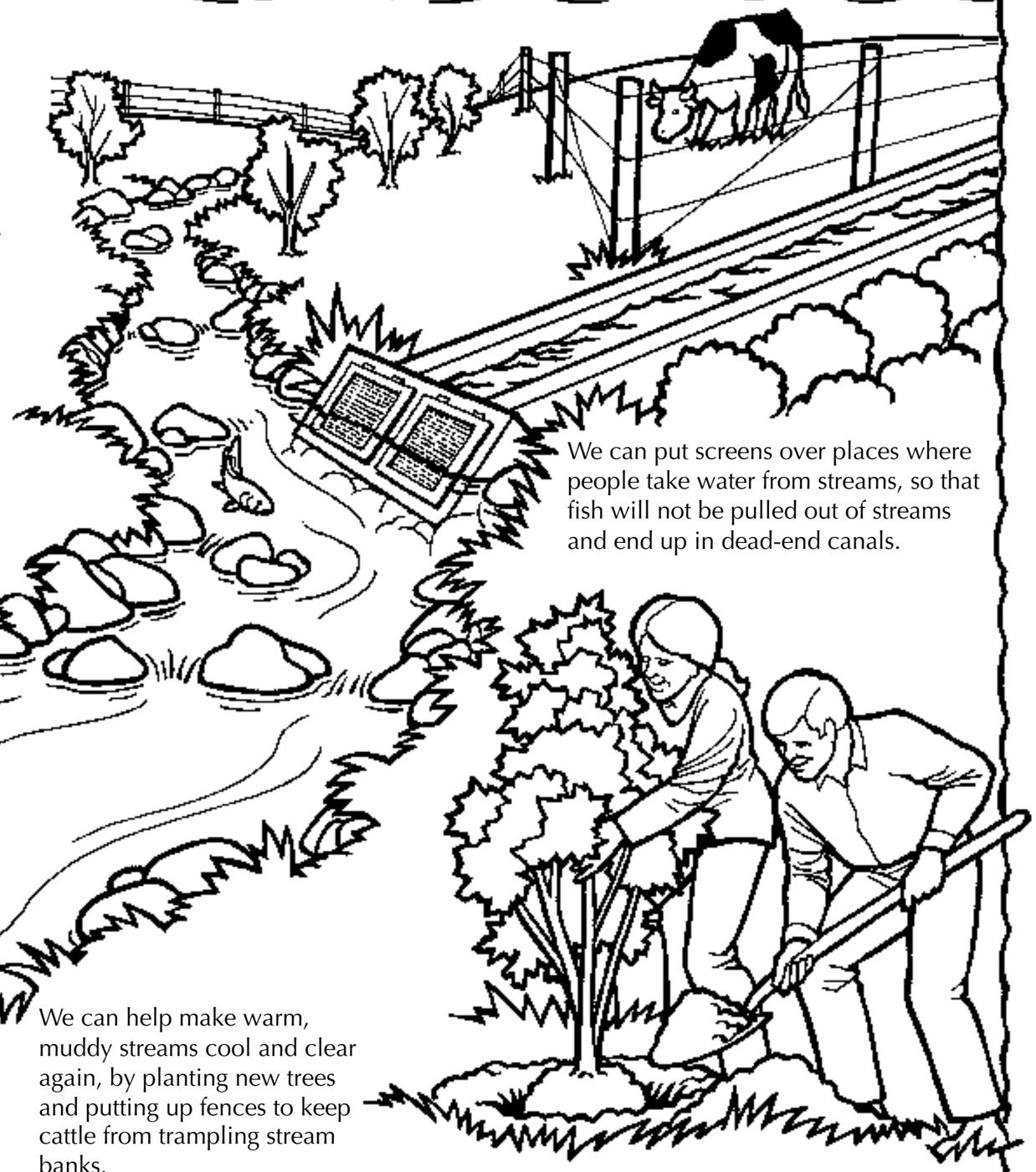
When forests are cut or burned down, or too many cattle trample the ground, soil washes into rivers. The soil covers up salmon nests, and the eggs die. The water becomes warmer and muddier. Salmon fry get sick more easily. If the temperature rises above 77 degrees, they die.

Polluted water, which runs into rivers from places where people live and work, can contain chemicals which hurt or kill salmon.

Helping the Salmon



We can build fish ladders, which look like big, watery stair steps, to help salmon swim over the dams. We can place new gravel below dams, so that there there is plenty of gravel for the salmon to build their nests.

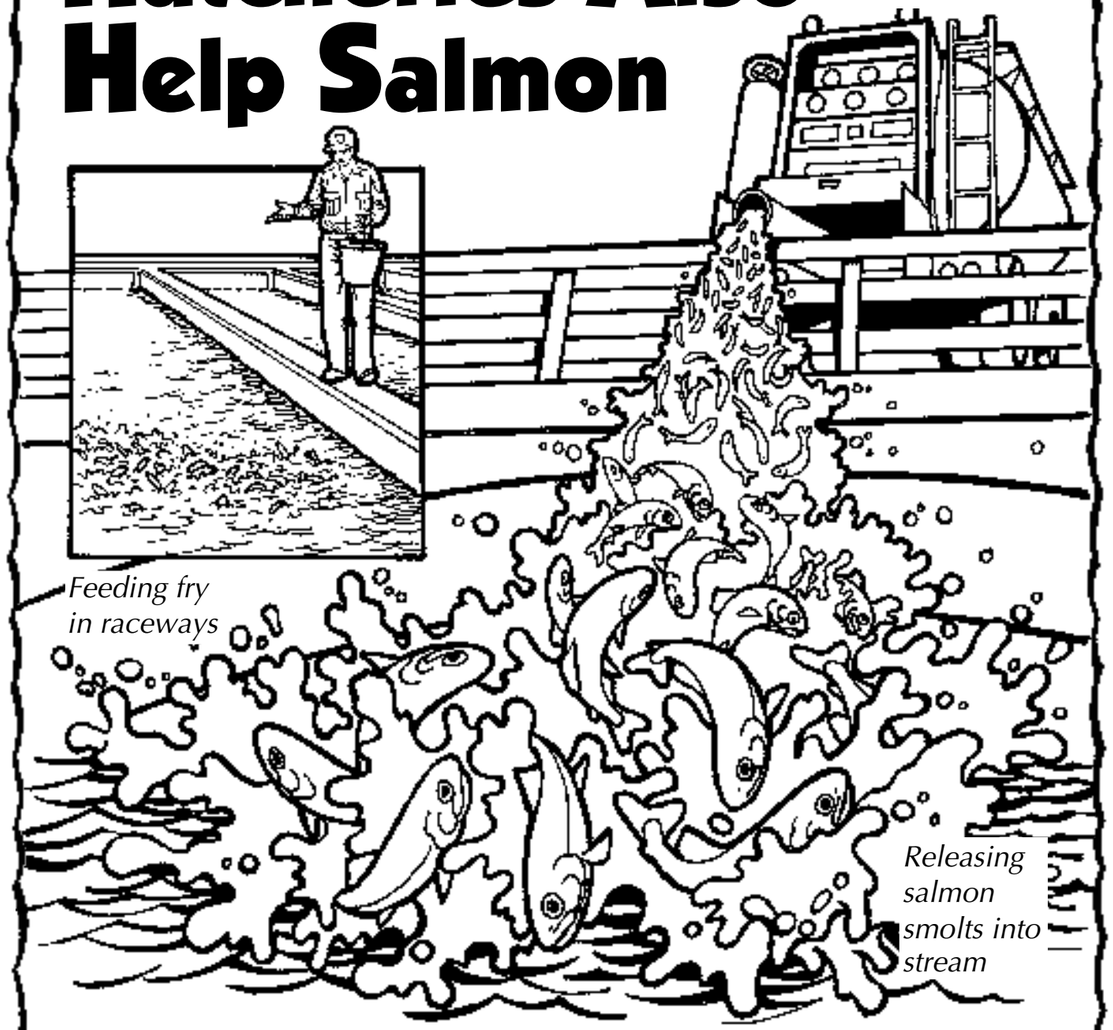


We can put screens over places where people take water from streams, so that fish will not be pulled out of streams and end up in dead-end canals.

Today, rivers in the West are controlled by people. In dry places, aqueducts and irrigation ditches take water from rivers and send it to cities and farms. Sometimes there may not be enough water left over for fish. It's only been recently that people realized they must conserve water, and set some aside for fish. We also need to help fish get safely past the obstacles we have created. Here are some things people are doing to help salmon!

We can help make warm, muddy streams cool and clear again, by planting new trees and putting up fences to keep cattle from trampling stream banks.

Hatcheries Also Help Salmon



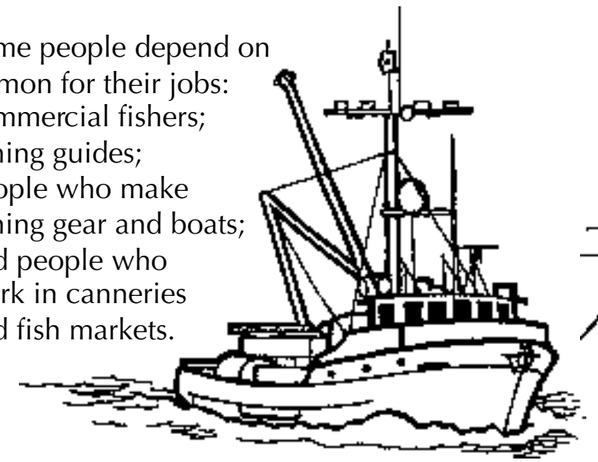
Feeding fry in raceways

Releasing salmon smolts into stream

Fish hatcheries help make up for spawning habitat that has been lost. Adult salmon are caught and spawned at the hatchery. Hatchery workers put the eggs into plastic trays. Cold, clean water runs through the trays. When the salmon fry hatch, they are put into concrete ponds called **raceways**. People feed the fry until they are ready to migrate to the sea. But once they have been released, the young salmon must survive without any help, just like wild salmon do.

Why Do We Need Salmon?

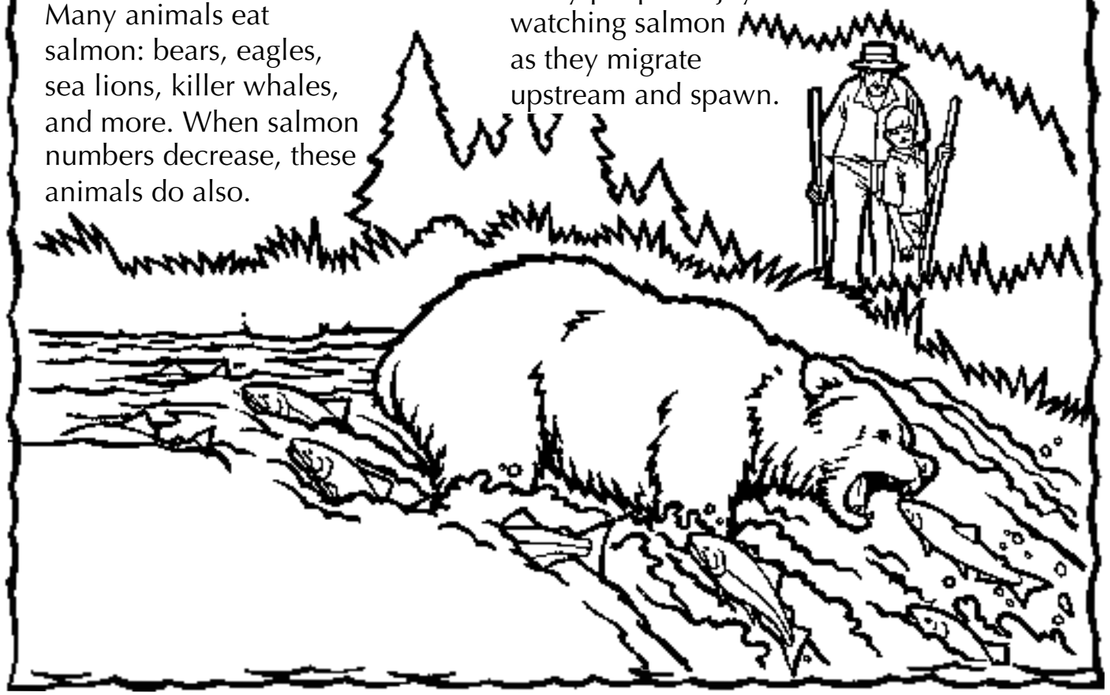
Some people depend on salmon for their jobs: commercial fishers; fishing guides; people who make fishing gear and boats; and people who work in canneries and fish markets.



Salmon are an important part of the culture and livelihoods of many Indian people.

Salmon are part of a healthy ecosystem. Many animals eat salmon: bears, eagles, sea lions, killer whales, and more. When salmon numbers decrease, these animals do also.

Many people enjoy watching salmon as they migrate upstream and spawn.



Salmon Activity Page

What Can I Do to Help Salmon?

Unscramble the words in ( ) to find out!

Conserve _____(ertwa) and
_____ (celeyticirt).
If you use less, there will be more water for salmon.

Recycle and reuse paper. Saving _____ (seret) will help save salmon.

Volunteer to help _____(trerose) streams by planting trees.

Don't dump oil, antifreeze, or other chemicals into street drains. Many drains empty into _____(siverr)!

Talk to your _____(endsfri) and _____ (rentspa) about salmon and what they can do to help.

Word Search

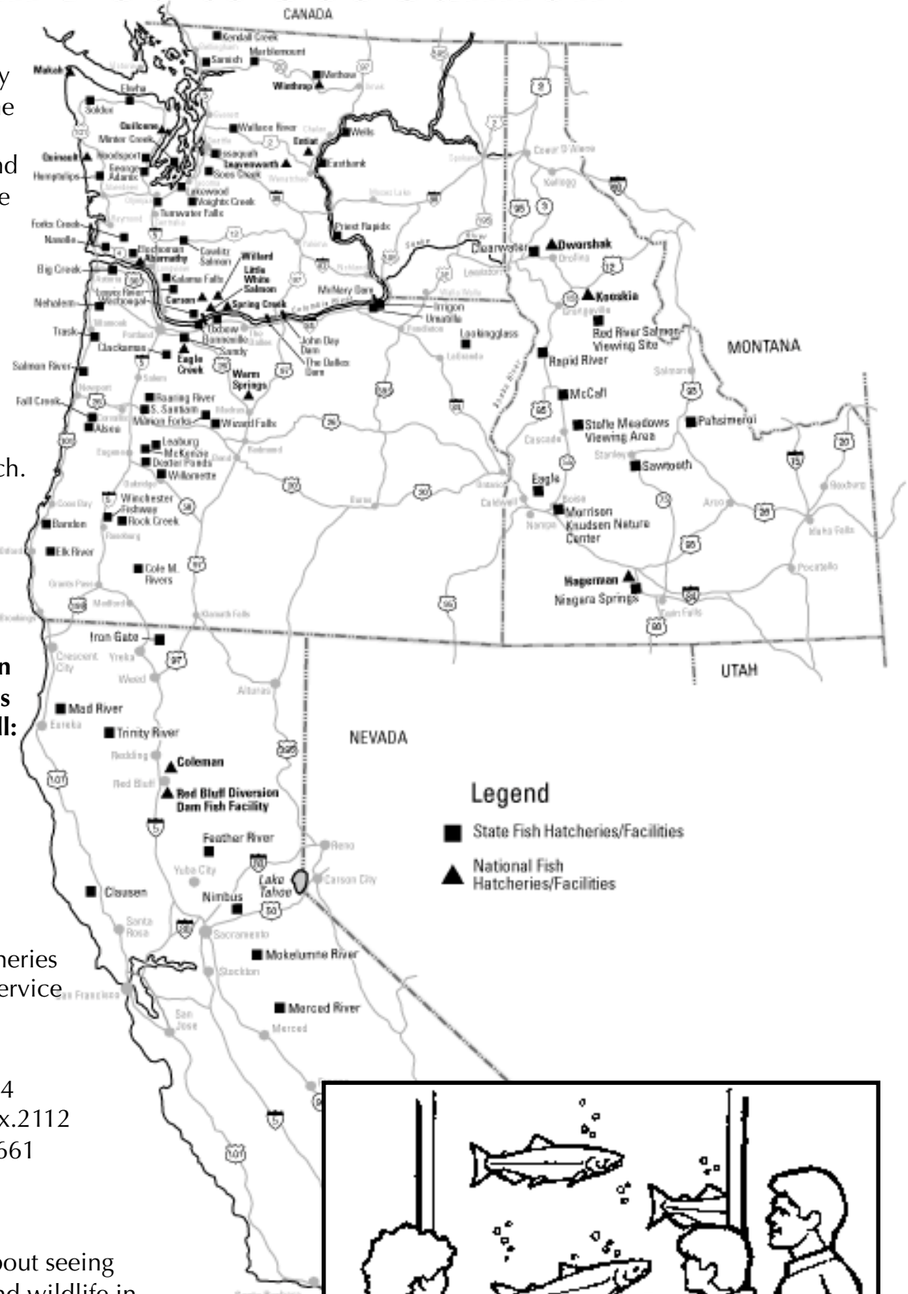
There are 20 "salmon words" hidden in this puzzle. Can you find them all?

salmon
steelhead
chinook
coho
pink
chum
sockeye
snout
gravel
spawn
fry
smolts
estuary
habitat
hatchery
restore
food chain
life cycle
predators
migration

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

Where Can I Go to See Salmon?

Salmon may be coming to a river or fish hatchery near you! Here are some places in California, Oregon, Washington, and Idaho where you can see salmon and steelhead. The best months to see salmon are July through October in Oregon, Washington, and Idaho; and October through February in California. Steelhead arrive later, December through March. Exact dates may vary, so call ahead before planning your visit.



For more information on National Fish Hatcheries and salmon viewing, call:

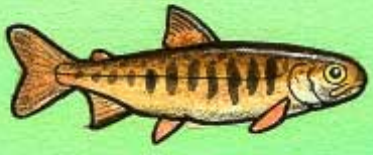
California:
Coleman National Fish Hatchery
530/365-8622

Oregon, Washington, and Idaho:
Outreach Specialist, Fisheries
U.S. Fish and Wildlife Service
503/231-6874

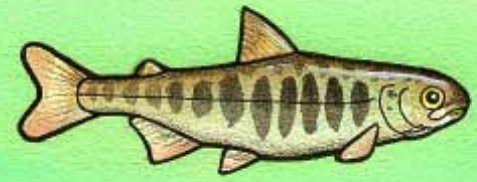
State Fish Hatcheries:
California: 916/653-6194
Oregon: 503/872-5252 x.2112
Washington: 360/902-2661
Idaho: 208/334-3791

Visit Us on the Web!
For more information about seeing salmon and other fish and wildlife in the Pacific Region, visit the U. S. Fish and Wildlife Service on the Web at **http:/www.r1.fws.gov** and click on "Visitor Directory."

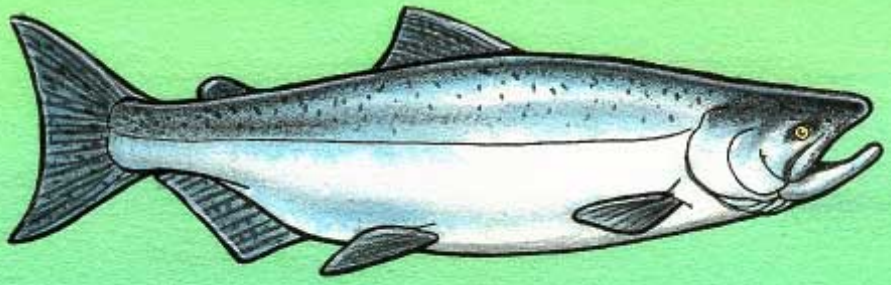
Color Us!



Coho Fry

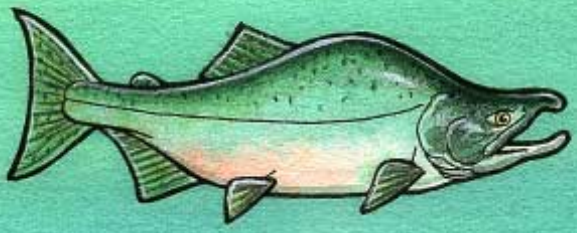


Chinook Fry

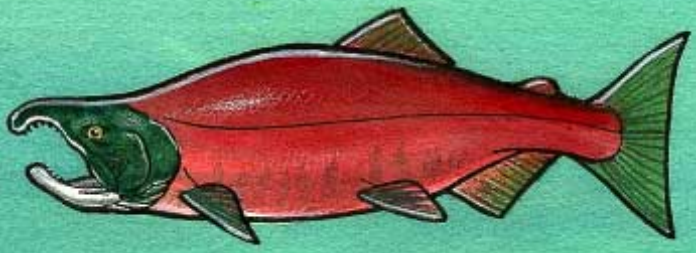


Sea-run Chinook

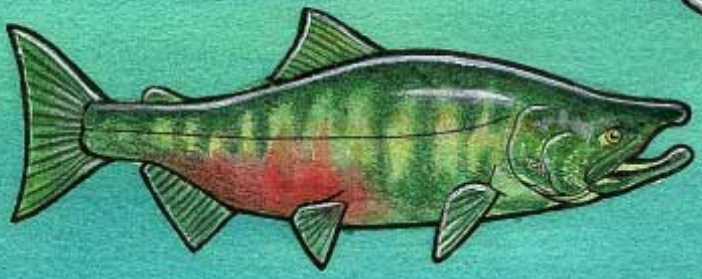
Spawning Chinook



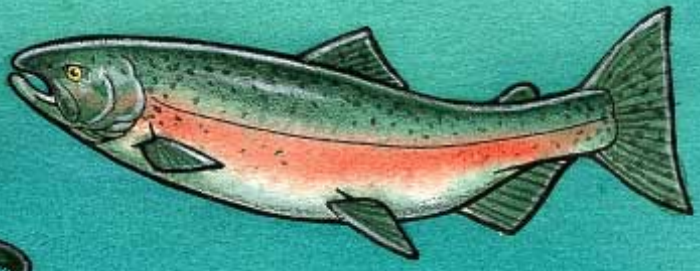
Spawning Pink



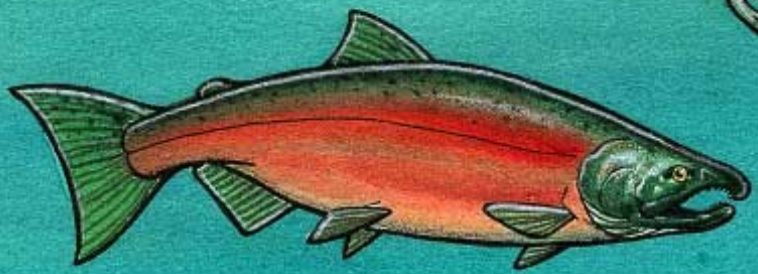
Spawning Sockeye



Spawning Chum



Spawning Steelhead



Spawning Coho