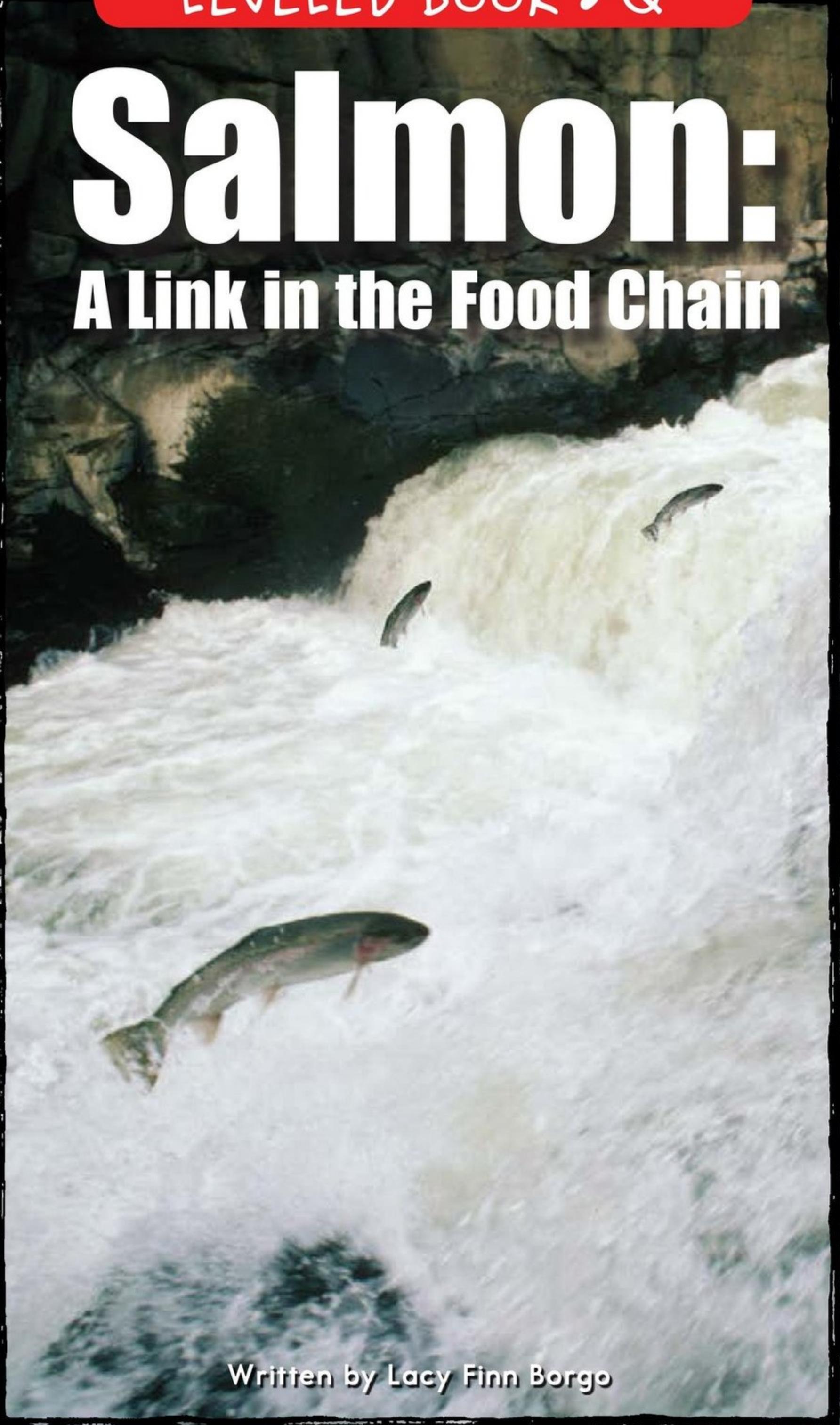


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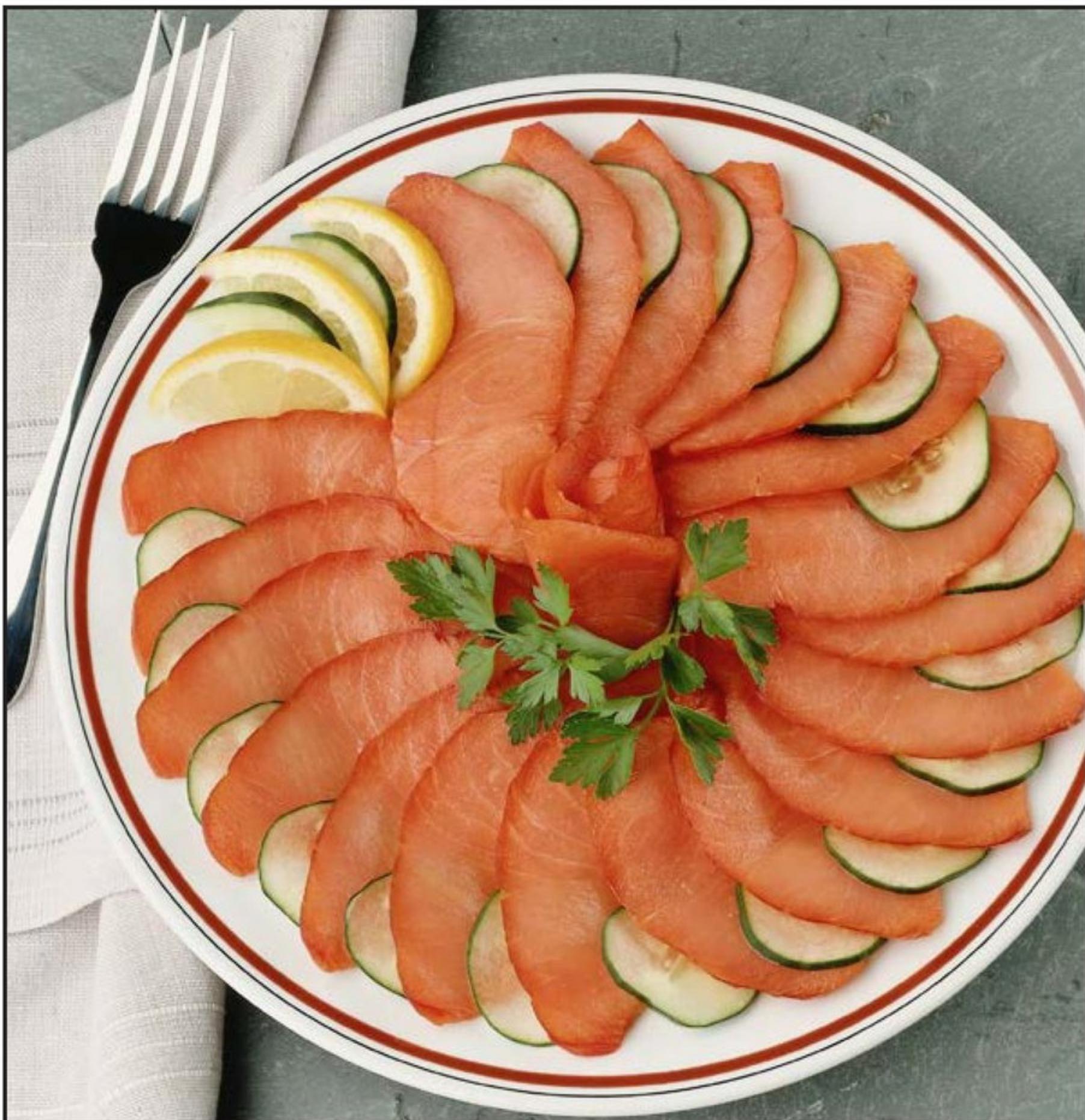
Salmon: A Link in the Food Chain



Written by Lacy Finn Borgo

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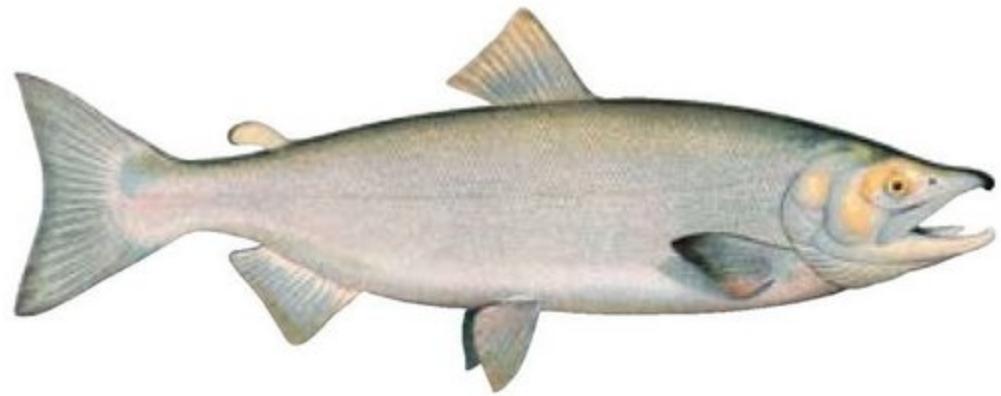
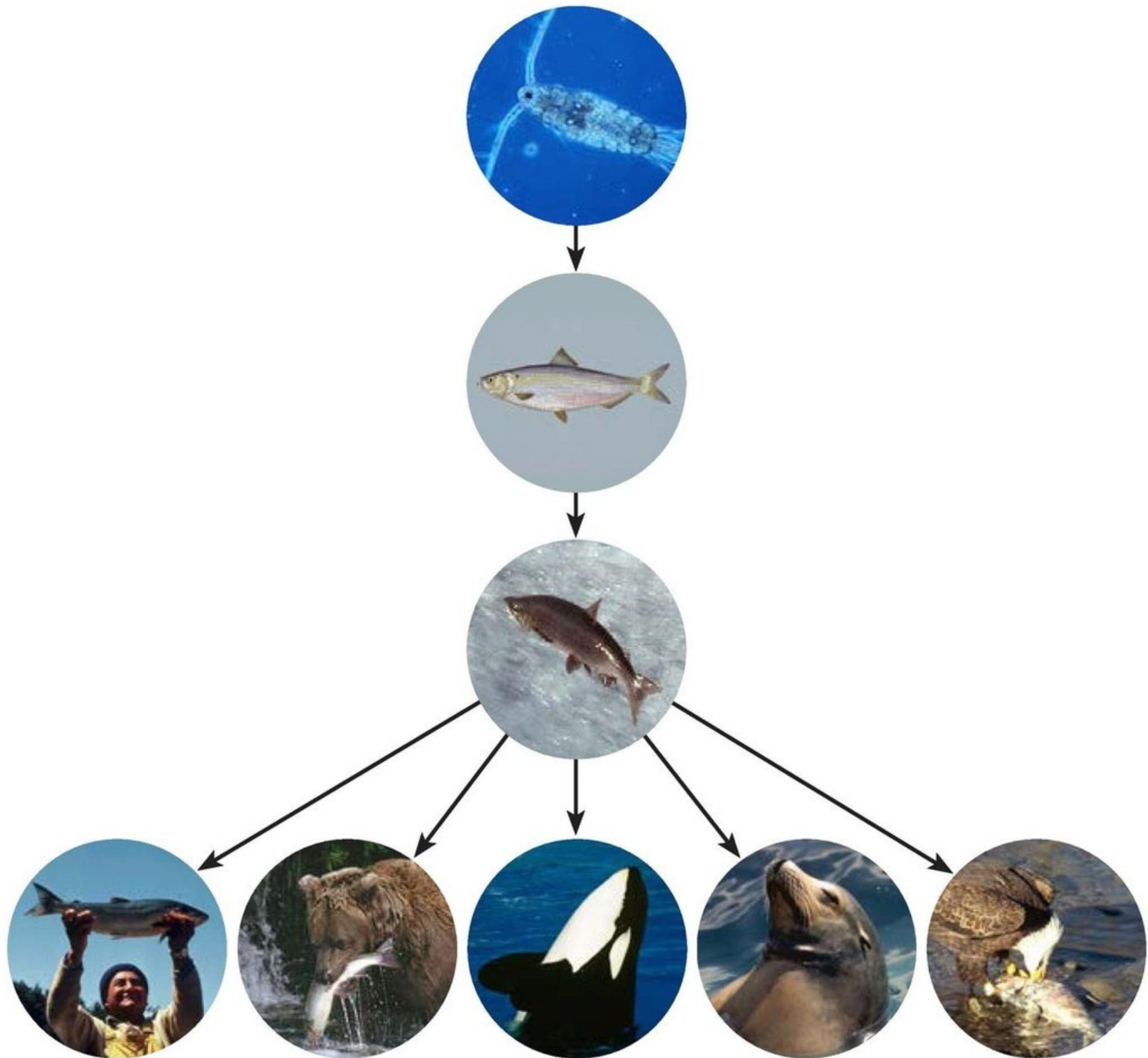


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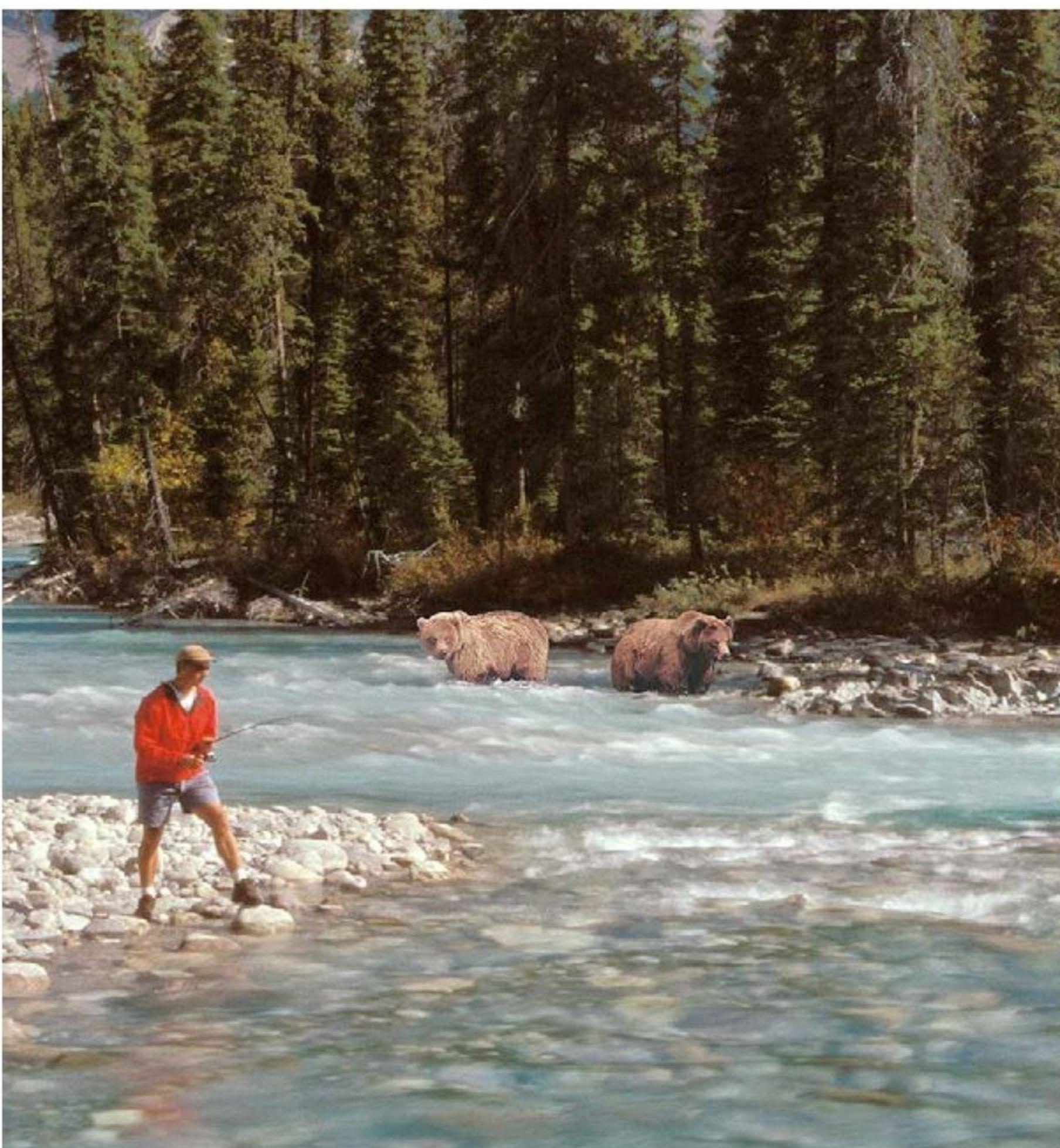


A Chain of Life

Imagine a chain. Each link is connected to the next. One link cannot be broken without affecting the other links in the chain.

Salmon are links in many different **food chains**. As salmon go through the stages of their life, they eat and are eaten by different living things.

Let's look at the food chain for an adult salmon. It begins with **plankton**, tiny living organisms. Plankton are eaten by small fish such as herring. Herring are then eaten by salmon. A salmon may be eaten by a human, a bear, a killer whale, a seal, or an eagle. Harming one living thing in a food chain harms other living things in the chain.



Humans sometimes catch fish to eat, and bears do, too!

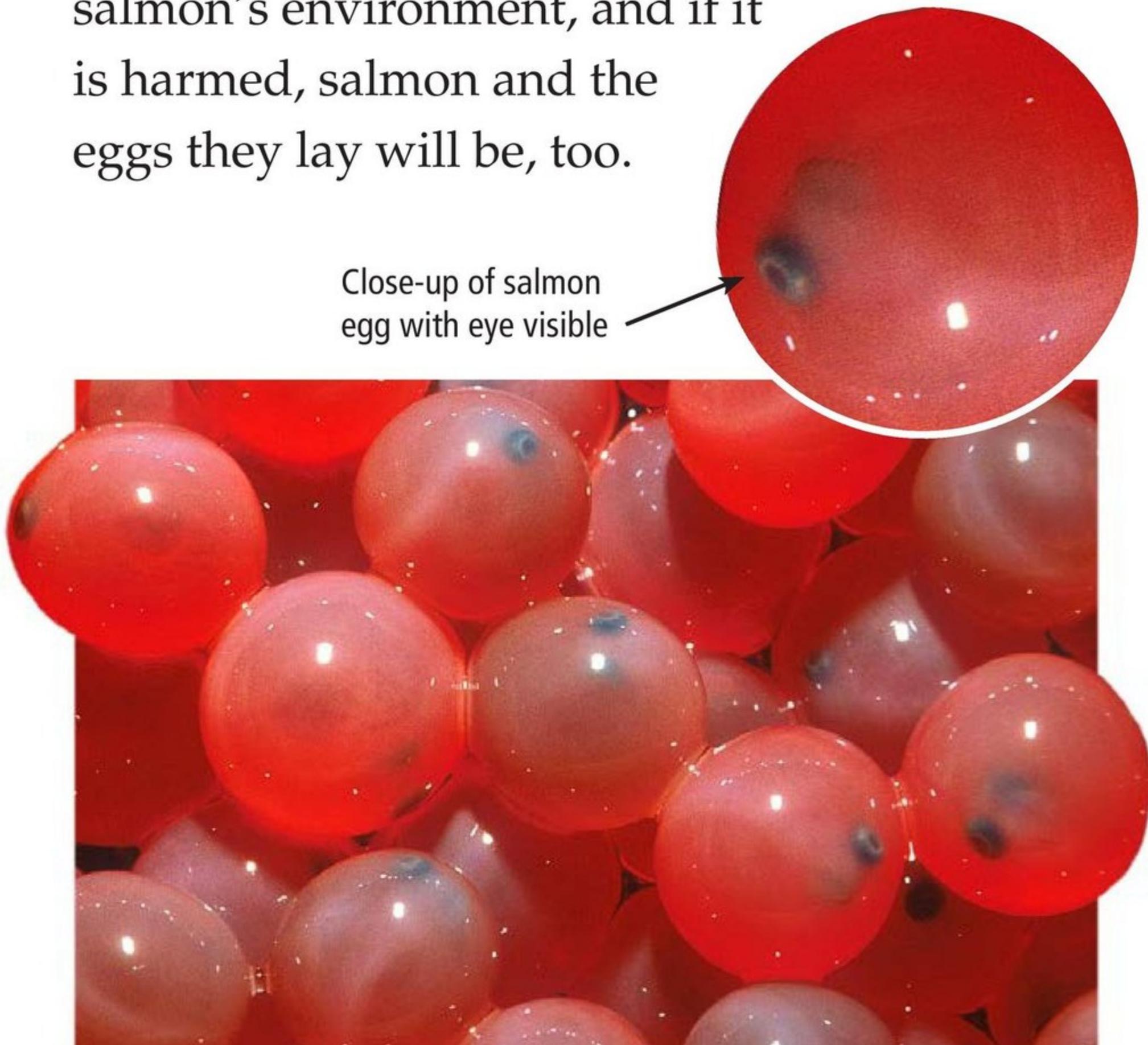


Salmon spend much of their lives in streams or rivers. Only at the end of their lives do they reproduce.

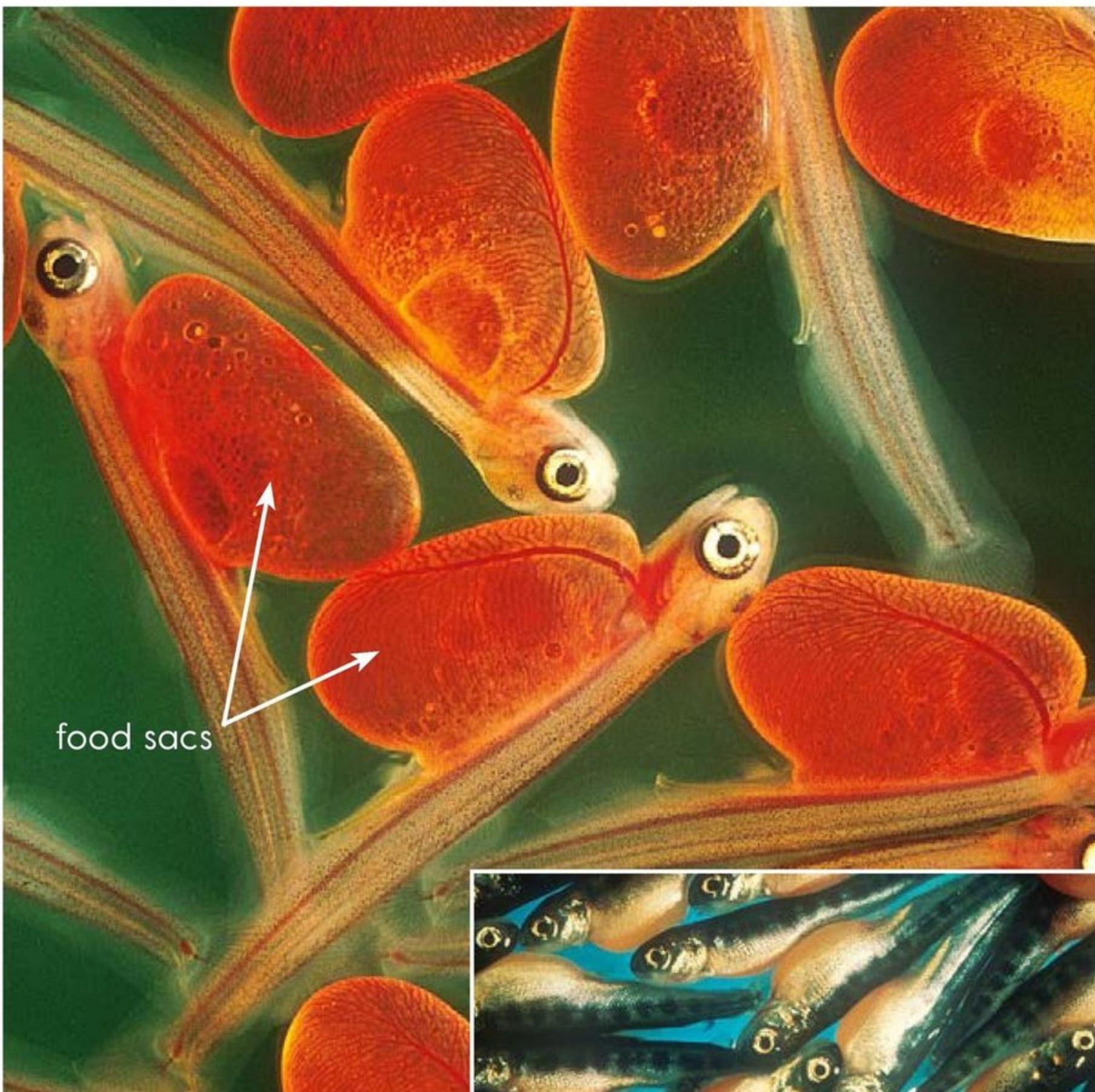
Salmon are travelers. They start their lives in streams or rivers, migrate far into the ocean, and return to the very same place to **spawn**, or reproduce. Salmon are transformers. During a salmon's life, it will change shape and color numerous times. In this book, you will learn about the salmon life cycle and about all the ways they are **interconnected** with other animals and with their environment.

Eggs

Salmon begin as tiny eggs laid in the gravel of a riverbed or streambed. Salmon need cold, clean water in order to lay and **fertilize** eggs. If the temperature is too warm, the salmon may die before the eggs are laid. Salmon absorb oxygen from the water, so if the water is polluted, making it low in oxygen, salmon cannot breathe and will die. Water is a salmon's environment, and if it is harmed, salmon and the eggs they lay will be, too.



A single salmon can lay thousands of eggs at one time.



The sac attached to newly hatched salmon gives them what they need to grow.



Salmon fry

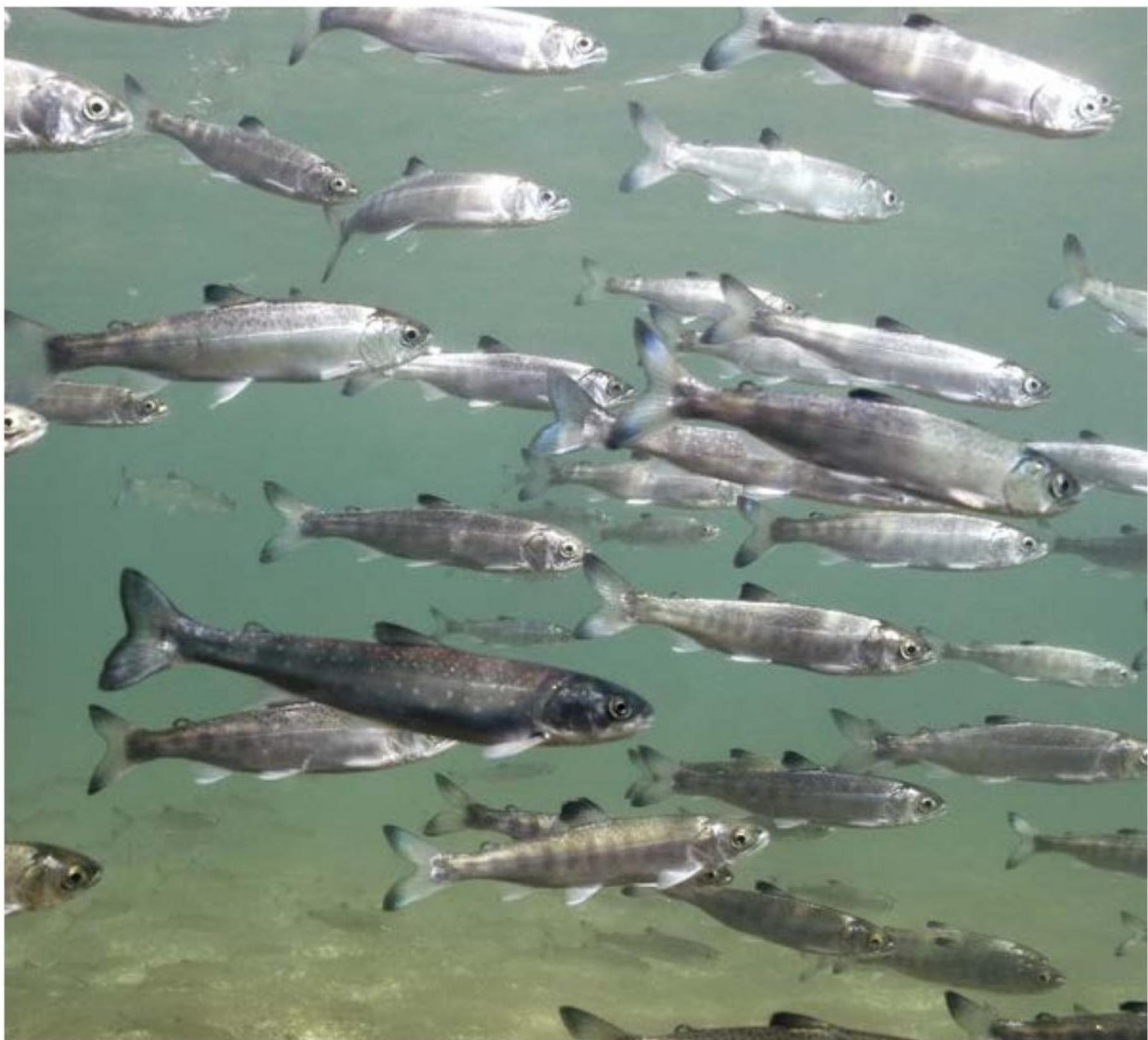
Alevins and Fry

After about two weeks, the eggs hatch. The tiny salmon that emerge, called **alevins** (AL-uh-vins), have their food attached to their underbellies in a sac. Once the sac is empty, the alevins develop stripes and are called **fry**.

Fry eat plankton. If there are not enough plankton, the fry will starve. Plankton also need to live in clean, cool water. Plankton are a link in the food chain, and if it is disturbed, the fry will be, too.



Plankton magnified many times under a microscope



Salmon change color from brown to silver to better disguise themselves in the ocean.

Smolts

The amazing journey begins as fry change from brown to shiny silver and transform into **smolts**, the next stage in their life cycle.

Smolts eat insects. If there are not enough insects to eat, the smolts will not have enough energy to complete their migration to the sea. Insects are links in the food chain, and if they are disturbed, the salmon will be, too.

The smolts journey downstream to an area between the river and the ocean called an **estuary**. An estuary is where the fresh water and salt water combine to form **brackish** water. Smolts need the perfect estuary to prepare their bodies for the ocean and its salty water. If the estuary doesn't have just the right balance of fresh water and salt water, the smolts cannot make the changes they need to survive in the sea.

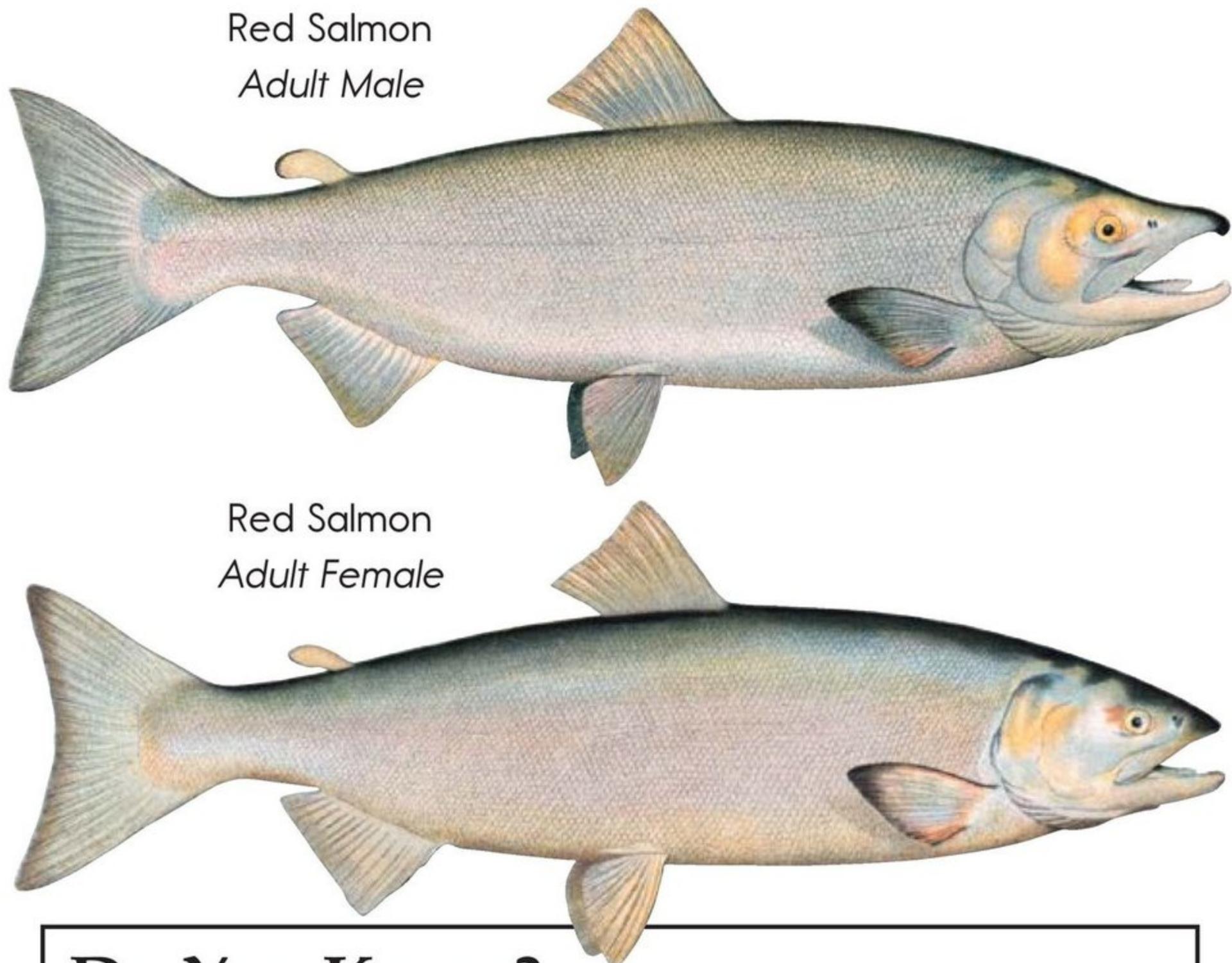


Shoreline where fresh water meets salt water

Some estuaries have become polluted with chemicals. If the water contains chemicals, the fish absorbs those chemicals. This can harm the fish or even kill it. If the smolt absorbs pollution into its body and then a bird eats the smolt, the bird becomes poisoned. Smolts are part of the food chain, and if they are disturbed, the birds will be, too. Already we can see that water, fish, plankton, insects, and birds are all connected.



If the fish has absorbed chemicals, the bird could get sick after it eats the fish.



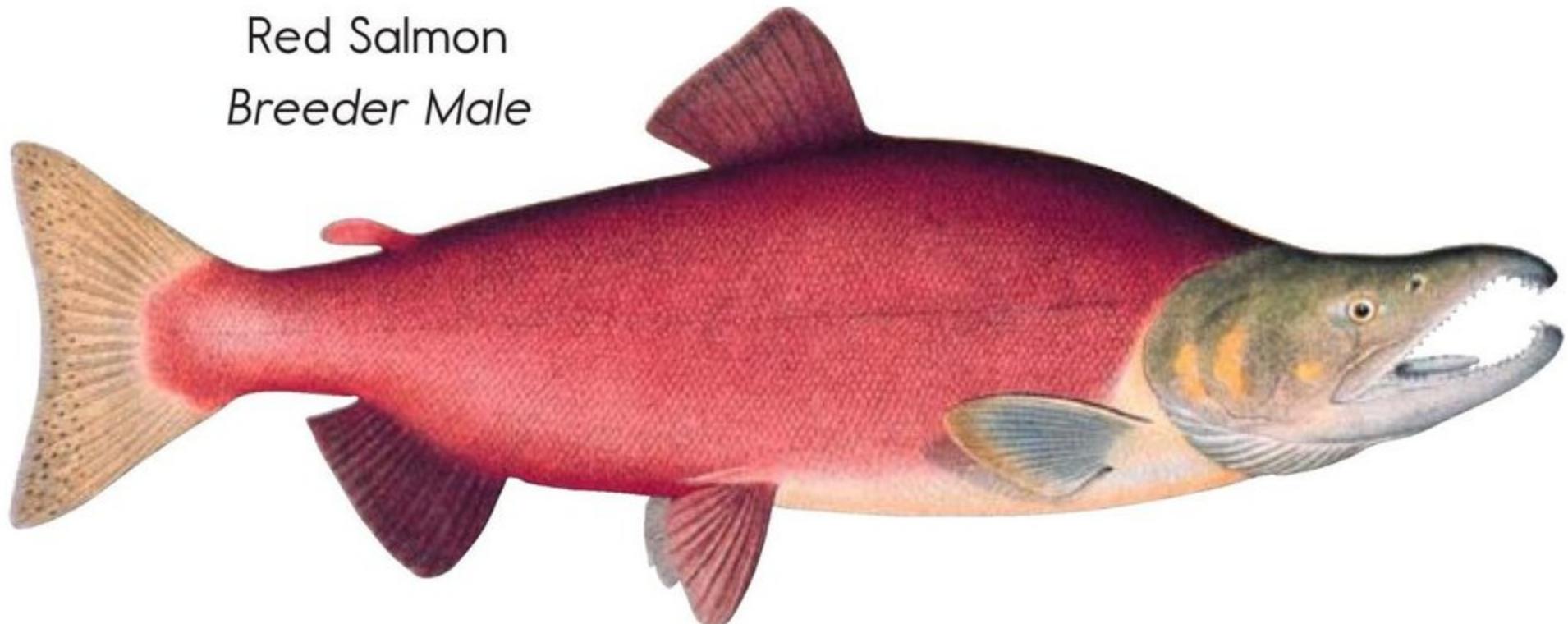
Do You Know?

Some scientists believe that salmon memorize the scent of their own river and smell their way home.

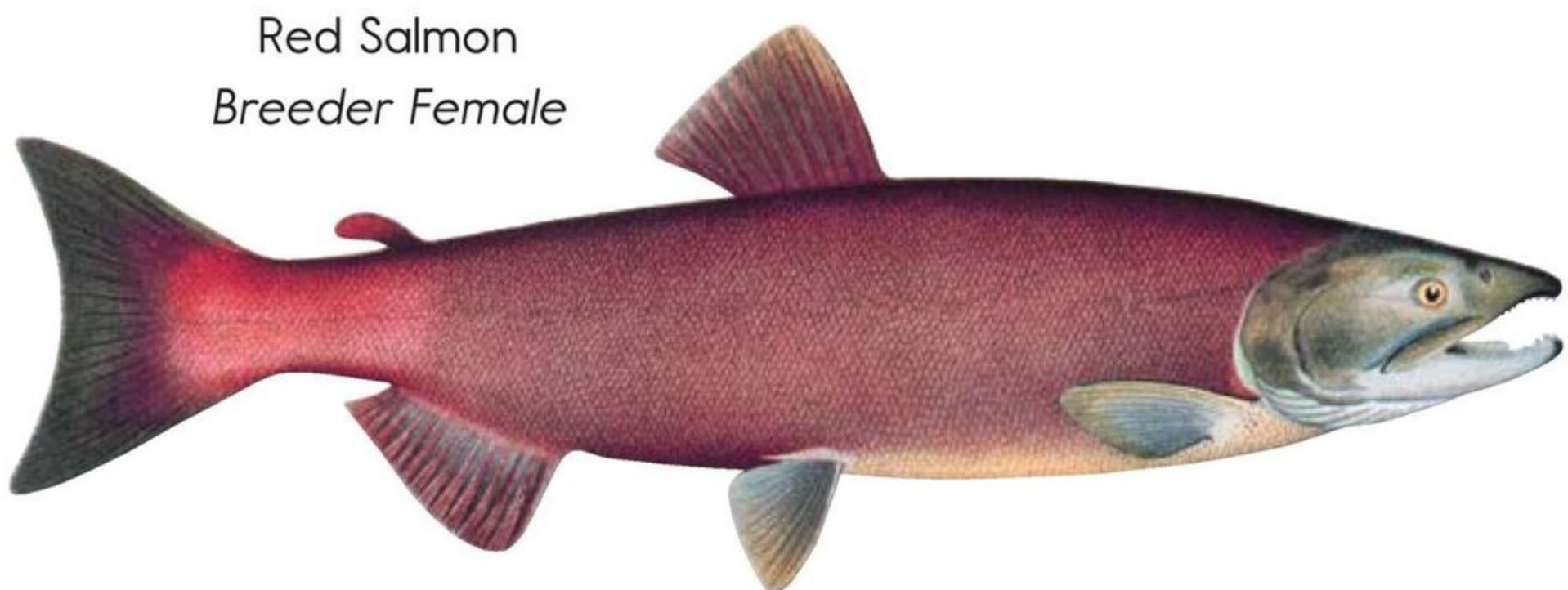
Adults

In the estuary, the smolts will develop into adult salmon, which scatter into the open ocean. The adult salmon live and feed on smaller fish in the ocean for one to seven years, traveling thousands of miles. When the time comes to reproduce, the salmon make the long swim back to the same river where they were hatched. These salmon will become spawners.

Red Salmon
Breeder Male



Red Salmon
Breeder Female



Spawners

As adult salmon return to fresh water, they lose their shiny, silvery color. The males change to bright red and green, and grow a hooked nose and large teeth. The females, which already carry thousands of eggs, turn brown. The males and females struggle against powerful currents as they swim upstream. Spawners do not eat during their voyage. Instead, they burn the fat they have stored from feeding in the ocean.

Because spawners are the favorite food of bears and eagles, the trip upstream is dangerous. Bears can be spotted fishing for salmon on the banks of rivers and estuaries. Bears need a great deal of body fat to make it through the winter. Salmon skin is loaded with fat. If there are many salmon, the bears will eat only the nutritious skin and discard the rest.



Bears actually catch the most salmon at night.



Bald eagles like to live near salmon streams so they are close to food.

Eagles also love salmon. They catch their own, or they eat what the bears have left. Humans also eat salmon. Salmon are a link in the food chain, and if they are disturbed, the bears, eagles, and humans will be, too.

Water is again critical to spawners. Humans have constructed dams in many rivers, and this prevents spawners from returning home to spawn. Fewer eggs mean fewer new salmon and less food for birds, bears, and humans. Water is part of the spawners' environment, and if it is disturbed, the salmon, bears, birds, and humans will be, too.



Most salmon only spawn once in their lifetime.



The decomposing bodies of salmon fertilize the stream, helping the life cycle to start over again.

Once the spawners make it home, the females lay eggs and the males fertilize them. One week after reproducing, the salmon die. But they do not go to waste. Birds, bears, and other animals consume their bodies. Nutrients from the spawners' flesh and bones also provide food for plankton.

Conclusion

Salmon are amazing. They begin their lives in a riverbed or streambed, travel to an ocean, and return to the place they were born. Their bodies transform at each stage of their journey. Salmon are important links in many food chains. These food chains change during different parts of a salmon's life. What happens to salmon affects what happens to other living things in these food chains.



Some types of salmon grow very large—up to 135 pounds, or about 61 kg.

Glossary

alevins	baby salmon that have a food sac on their underbelly (p. 8)
brackish	fresh and salt water mixed together (p. 11)
estuary	the part of a river where the fresh water mixes with the ocean's salt water (p. 11)
fertilize	to combine male and female cells to create a new animal or plant (p. 7)
food chains	plants and animals that are all connected to each other through what they eat (p. 4)
fry	young salmon that live in a river (p. 8)
interconnected	connected with many things in many ways (p. 6)
plankton	tiny animals that can only be seen with a microscope (p. 5)
smolts	young salmon that move from a river to the ocean (p. 10)
spawn	reproduce and lay eggs (p. 6)

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