Chapter 9
Civics and the natural world

We think of our government as being "of the people, by the people, for the people." But government is also for the birds, bees, bears, and beavers. They can't vote, but their homes, families, and futures depend on what governments do or don't do. In fact, the whole web of life is affected by decisions our elected leaders and government agencies make.

We govern all the land we walk on, the air we breathe every day, and every drop of water. Decisions our local, state, tribal, and federal governments make affect every forest, every mountain, and every lake and river.

Illustration by Nguyen Tran

This chapter is about how civics and the natural world are connected, and its purpose is to get you thinking about how these issues will affect your future.

Land

First it was Indian country. Then the federal government owned it.

As the United States expanded during the 1800s, the federal government took over ownership of vast land areas that had been home to Native Americans since time immemorial. The federal government gave a lot of the land to settlers as they moved west. They also gave a lot to railroads to encourage them to build rail lines that connected the whole country. A small amount was set aside for Indian reservations.

Then the federal government gave some of it to the states

As states were created, large areas of federal land were also given to the new state governments. When Washington became a state, the federal government gave it about 6.5 million acres.

photo courtesy Justin Haug, Washington Department of Fish and Wildlife

photo courtesy Linda Strand

A family near Ellensburg leases grazing land for their cattle from the government.

The state earns money from some of the land it owns in several ways. It sells rights to loggers to cut down trees, leases land to ranchers who need a place for their cattle to eat grass, and leases tide flats to companies that grow and sell shellfish. The state uses some of the money to pay for government buildings, colleges and universities, and public schools.

The state also uses some of the land it owns for parks, places for people to hunt and fish, and natural areas for native plants and wildlife.

The federal government still owns a lot of it

The federal government owns nearly 13 million acres in Washington. Federal land is used for national parks (such as Mount Rainier National Park); national areas where people can camp, hike, hunt, and fish; national historic sites; national scenic sites; wildlife refuges; and national forests. Federal land is also used for other purposes, such as military bases and the Hanford Nuclear Reservation. (That's where some of the first nuclear bombs were made, and now it's a big challenge to figure out what to do with the pollution and nuclear waste there.)

photo courtesy the Department of Ecology

There is a long-term effort at Hanford to clean up its nuclear waste.

Tribal land ownership

Tribal reservations have land owned by individuals (usually both Indians and non-Indians) and land owned by the whole tribe. Some tribes buy up pieces of privately owned land on their reservations to return more control to the tribe and to protect or restore their natural resources.

A quail mom and her babies

photo courtesy Jessica Weinberg McClosky, National Park Service

Everyone has an opinion about government-owned land

People often disagree about how much land governments should own—especially the federal government. Some people think that if more of that land were sold to people, they could use it to make money and create more jobs.

But other people wish the federal government had more land to preserve wilderness areas and habitat (places to live) for birds, bees, bears, and beavers. Some also think the federal government will take better care of the land than private owners would.

photo courtesy National Park Service

Federal lands are used for such things as national parks where people can enjoy nature. Camping in the woods is a great way to reconnect with the natural world.

photos courtesy Washington State Department of Natural Resources

The state Department of Natural Resources manages state-owned forests. Some forests are used for selling timber to raise money for public services, and some are set aside as Natural Area Preserves.

Air

Pollution is harmful stuff that makes air, water, or land unsafe or unhealthy for people and other living things.

The first Earth Day was the beginning of big changes

On April 22, 1970, the first Earth Day, hundreds of thousands of people in cities and towns across the country held big rallies calling for action to reduce air and water pollution and to protect the earth from a growing number of toxic chemicals.

Just a few months later, Congress enacted the 1970 Clean Air Act. (There were a few laws about air pollution before 1970, but they were pretty weak.) For the first time, the federal government set standards on how clean the air should be. It told states to create plans to make sure the air would meet the new standards. The federal Environmental Protection Agency—which was also created in 1970—had to approve each state plan.

photo courtesy Leslie Hoge Design

A growing number of stores have outlets where drivers can plug in their electric cars to recharge their batteries. Electric cars do not produce any air pollution.

Washington State took action

Also in 1970, the Washington State Legislature created the state Department of Ecology, whose job is to implement the federal laws about air and water quality. (Ecology also deals with other environmental laws, such as water rights and resources, toxic and nuclear waste, and shoreline management.)

Scientists at the Department of Ecology (and sometimes their partners in local and tribal governments) monitor and measure air pollution. They use that information to try to make sure all areas of our state meet federal standards for healthy air. The Department of Ecology also creates rules that people, industries, farms, trucks, and cars have to follow to limit pollution.

How clean is our air?

Usually, our state's air is clean enough to be healthy. One advantage of all the rain that falls on the west side of the Cascades is that it washes pollutants out of the air—but then, of course, those pollutants end up on the land and in the water.

In the summer, when the weather is dry, people on both sides of the state sometimes notice a haze of pollution that limits our views of the mountains and landscapes we love. Some of the haze is caused by windblown dust and soot from wildfires or other burning, both here and from other states and Canada. In fact, as our summers become drier and hotter because of climate change, the smoky haze from wildfires may become more common, leading to very unhealthy air.

Other sources of haze and air pollution include wood-burning stoves and fireplaces, airplanes, ships, cars and trucks, electric utilities that burn coal or natural gas, and other industries. Some of the gases and fine particles that cause haze come all the way from Asia.

photo courtesy Linda Strand

The bald eagle, our national bird, was an early symbol of the environmental movement. Eagle populations had been declining until a campaign to ban a dangerous pesticide, DDT, helped save them. Now they are thriving again.

As the number of people in our state grows, our air quality is likely to get worse unless we find ways to reduce the amount of fossil fuels we burn in vehicles and industries. (Fossil fuels include gas, oil, and coal.)

One big change that will help improve Washington's air quality is a power plant in Centralia that is phasing out the use of coal. It is the last coal-fired power plant in the state, and it is switching to natural gas, which produces a lot less air pollution. (Most of our electricity in Washington comes from hydropower—the power created by water rushing over dams in rivers. It does not cause any air pollution, but it has caused some decline in the fish in our rivers.) Still, natural gas is a fossil fuel, and while it creates less pollution, it still pollutes.

Today, energy from wind farms and solar panels are the only completely nonpolluting sources of energy. A lot of researchers are working to improve the technology for these energy sources and to find more.

It will take continuing work by everyone—citizens, government agencies, elected leaders, and industries—to protect us from the harm that air pollution causes. So it's a good thing that April 22 is now celebrated all over the world as Earth Day—a day to focus attention on solving problems like air pollution.

Water

Eighty percent of Washington's water is used for agriculture, so farmers and orchardists are always looking for ways to irrigate more efficiently.

photo courtesy Washington State Department of Agriculture

There are four big issues about water:

- How to keep it clean and cold.
- How to be fair about who controls it.
- How to make sure we don't use more than nature can supply for both people and fish.
- How to adapt to climate change impacts on water, such as changes in rain and snowfall patterns, as well as ocean water becoming more acidic.

Dam!

Most of the electricity we use comes from the power of water rushing over dams. It's called hydroelectricity. (*Hydro* means water.) It doesn't produce any air pollution. Making electricity by burning oil, coal, or natural gas does pollute the air. So we are lucky to have hydropower.

Another benefit of dams is that a lot of water is stored in the lakes that form behind them. That water can be used to irrigate (spread water on) crops in the summer when there is little or no rain.

But the bad thing about dams is that they often block salmon when they are trying to swim to and from the sea.

The Bonneville Dam, a huge dam on the Columbia River, has fish ladders that help some of the fish go around the dam. But another big dam, the Grand Coulee, is a dead end for fish because the fish have no way to go around it.

This 2014 photo of the Elwha River shows the restored beach and estuary habitat, which benefits fish and many sea life species. The Coastal Watershed Institute has been providing scientific expertise and community outreach for the dam removal project for over 25 years.

This 2005 photo of the Elwha River estuary shows how two dams on the river blocked a hundred years of sediment.

In one river, the fish finally won out over the value of electricity. Two dams were built in the early 20th century on the Elwha River near Port Angeles. The dams blocked 81 miles of river. The number of salmon fell a lot. This was terrible for the Klallam Tribe, because the Elwha River was famous for its big, beautiful salmon and other fish. The tribe had been eating those fish since time immemorial.

For many years, the tribe and other people worked to persuade the government to remove the dams. After all, they were not producing a lot of electricity. Finally, in 1992, a law was passed to remove the dams. Even then, it took until 2014 for the dams to be completely taken down.

The Lower Elwha Klallam Tribe and many other people celebrated as the fish returned to the upper reaches of the river that had been blocked for nearly a hundred years.

Once the dams were gone, something else happened too: the river carried sediment (mostly sand) to the seashore. Before, the sediment had been trapped behind the dams. Now that the river ran free, the sediment created a lovely estuary (the place where a river meets the sea) and beaches that are home to crabs and many other species of sea life.

Go play outside!

art by MWillowsIllustration

In the past few years, many scientists have hooked people up to various instruments to measure the effect of being outside in a natural setting. Their blood pressure, brain function, and heart rate tests proved what poets have written about for centuries: being outdoors makes us calmer and healthier, helps us think more clearly and remember things, and makes us less grouchy.

Some doctors are now writing prescriptions for "ecotherapy," a fancy way of telling their patients to spend more time outside.

The effects of spending time in the natural world are especially important for kids. Researchers say kids who spend time in nature often get sick less, concentrate better, and are better able to handle change and stress.


photo courtesy National Park Service

Kids used to spend a lot more time playing outside. In fact, 70 percent of moms remember playing outside every day, but only 26 percent of today's moms say their kids do. Today, the average kid spends seven hours a day in front of a computer, TV, laptop, or tablet screen.

But there is a movement to change this. Here in Washington, a program called No Child Left Inside, sponsored by the Washington State Parks and Recreation Commission, offers grants to help local organizations get kids out into nature. Several other states have similar programs.


photo courtesy Patti Coats

Each one of these issues is big and complicated; put them all together and you have a giant puzzle that people are working to solve.

photo courtesy Jason Wettstein, Washington Department of Fish and Wildlife

Who owns the water?

Managing water wisely requires sensible government policies based on sound science. This is one of many reasons citizens need a good education in science.

Including all the important policy issues about water would triple the size of this book. So here is just one piece of the giant water-policy puzzle:

Washington law says the state (that is, the public) owns the water. The state grants "water rights" to farmers, landowners, towns, and others. These are rights to use, but not to own, water.

photo courtesy Nisqually Indian Tribe, Natural Resources Department

The Nisqually Tribe counted Chinook salmon migrating upstream, mostly to see how many hatchery salmon there were compared to wild salmon.

Tribes also have water rights that come from the treaties they signed. Also, because tribes were promised the right to fish, they want to make sure that rivers and streams have enough clean, cold water to support the fish they depend on. If there isn't enough cold, clean water in the rivers for fish, it means the treaties Indians signed are being broken.

Use it for good or lose your water rights

Holders of water rights aren't supposed to waste water; they are required to use it for a beneficial (useful) purpose, such as watering crops like potatoes or fruit trees, supplying homes and businesses, or for industries. Water rights can't be taken away unless the water is being wasted, or not used. One basic rule of a water right is "use it or lose it."

Slugs and snails eat dead leaves and animal poop and turn them into plant food. They are also food for some birds and other creatures.

photo courtesy J. Preston, National Park Service

Another basic rule is "first in time, first in right." That means that whoever came first and claimed a water right, gets "first dibs." People who come later have "junior" water rights. No rule says everyone should share. A lot of people argue about whether that is fair.

As tribes have said for a long time, "water is life." Nothing lives without it. So no issue is more important than governing our use of water wisely, fairly, and with an eye toward the future.

Plants and animals, including us

Humans are one of about 140 mammals that live in Washington State. We also share the state with 341 species of birds, 470 fish species, 25 types of amphibians (creatures that live both in water and on land), 21 varieties of reptiles, well over 3,000 plant species, and about 2,000 kinds of moths and butterflies. And that's not counting insects, mosses, lichens, mushrooms, and many other life-forms.

Some of our "neighbors" are in danger of extinction

Some of the many creatures in Washington are in danger of extinction, which means they won't exist anymore. The number of resident orcas (whales), for instance, is declining because there aren't enough salmon for them to eat, and some orcas have died from starvation.

Federal, tribal, state, and local governments are working to save the salmon that the whales need for food. They are

istock.com

Resident orcas in the Salish Sea depend on abundant Chinook salmon to thrive.

also trying to clean up the pollution in Puget Sound. Many citizens are also deeply involved in this work. But it's hard to succeed when more people, with more cars, keep moving here.

On the east side of the state, pygmy rabbits—which are not much bigger than kittens—have struggled to survive, even with a decade-long effort to help them recover from near extinction. These tiny rabbits live mostly on sagebrush, but much of their habitat has been turned into farmland.

In 2017, a colony of these rabbits that scientists had cared for was nearly wiped out by a wildfire—a problem that is likely to become more common as climate change heats up and dries out our summers.

photo courtesy Kourtney Stonehouse, Washington Department of Fish and Wildlife

The endangered pygmy rabbit is not much bigger than a kitten.

Many other plants and animals in our state are on the federal government's list as "endangered" or "threatened" with extinction.

Invaders!

At the same time, many other plants and animals are "invasive." (That means they invade like an army that's almost impossible to stop.) They were imported in one way or another from other places. Some are plants that escaped from gardens into the wild and grew so much they are impossible to get rid of. Others are animals like nutria, which look like large rats, and bullfrogs, which are big

photo courtesy Delbert Pagayona, from Unsplash

photo courtesy the Department of Ecology

photo courtesy Thurston County Noxious Weed Control Board

Brazilian elodea gone wild—a lesson in why it's never a good idea to release pets or plants into the wild.

photo courtesy National Park Service

More humans mean more new houses. Now sometimes people see deer strolling down our sidewalks. Are deer invading the suburbs, or are suburbs invading the deer's habitat?

enough to eat small birds. Invasive plants and animals push native species out of their homes and can cause a lot of damage in other ways too.

One example of an invasive species is Brazilian elodea, a plant that people use in their home fish aquariums. Years ago, someone dumped the contents of their aquarium into a lake that flows into the Chehalis River. Within a few years, the elodea had gone wild, nearly plugging up 54 miles of the river. It took years of effort and expense to get rid of most of it, and it will require continued monitoring to keep it from growing back.

A state agency called the Invasive Species Council works to control invasive species, and a statewide Noxious Weed Control Board and county weed control boards work to get rid of invasive plants.

We live in animals' habitats

Wildlife also have many other problems. We see more and more reports of black bears and even cougars (mountain lions) showing up in areas where neighborhoods were built in their former homes. And as climate change has led to milder winters, urban rats can now have babies year round, so we have more and more rats.

Many more challenges exist living in harmony with creatures great and small. And each of these challenges requires a response from both government

Bears have shown up in people's neighborhoods, climbing fences, playing in swimming pools, and peering in windows.

photo courtesy Tom Kogut Photography

agencies and ordinary citizens. To succeed, we all need to learn about the plants and animals with whom we share the natural world.

Funding for natural resources and programs

Governments usually spend our tax dollars on the most immediate needs first: keeping us safe (police, fire departments, courts, and jails), educating us (schools and colleges), and maintaining our roads, sewers, and water supplies.

Everyone agrees that investing in parks and public lands, protecting air and water quality, and saving wildlife habitats are important, but they are often seen as less important than schools, police or roads.

Many citizens try to persuade governments to do more for wildlife, and that makes a difference. They are backed up by scientists who make an ever-stronger case for taking care of the natural world.

But when money is short, elected leaders often have to choose between cutting spending for schools or cutting spending to care for parks, wildlife, and fish.

If you had to make those choices, what would you do?

photo courtesy Christopher Gezon, National Park Service

Our state has many kinds of native bees as well as European honeybees settlers brought. Our food supply depends on bees because many plants can't multiply unless bees spread their pollen from one flower to another.

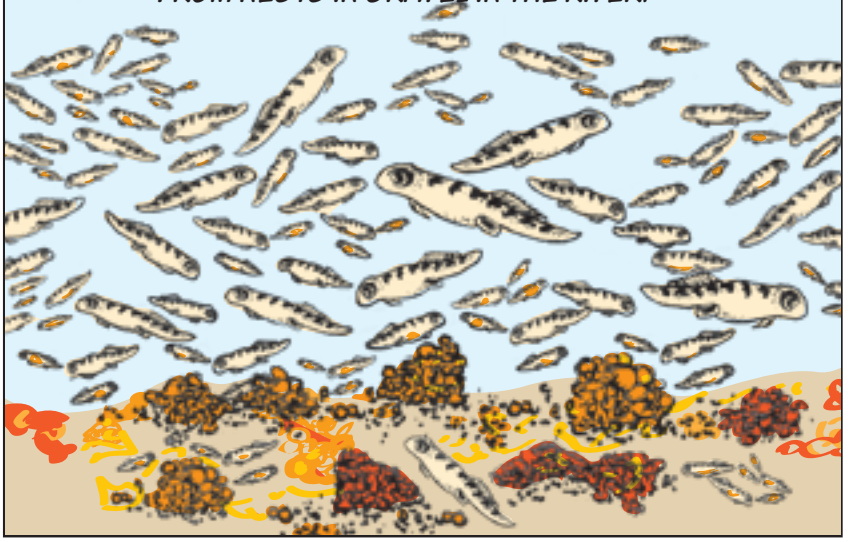
clockwise from upper left, photos courtesy: istock.com; Roger Mosely from Pixabay; Washington State Department of Agriculture; National Park Service; Washington State Archives; Debi Dixon, National Park Service; David Mark from Pixabay; istock.com

Clockwise from upper left: The Palouse; Second Beach, Olympic National Park; the Klickitat River Valley; Mt. Rainier; Moses Coulee; Stehekin, Lake Chelan, North Cascades National Park; Columbia River; Mt. St. Helens

THE LIFE OF SALLY THE SALMON

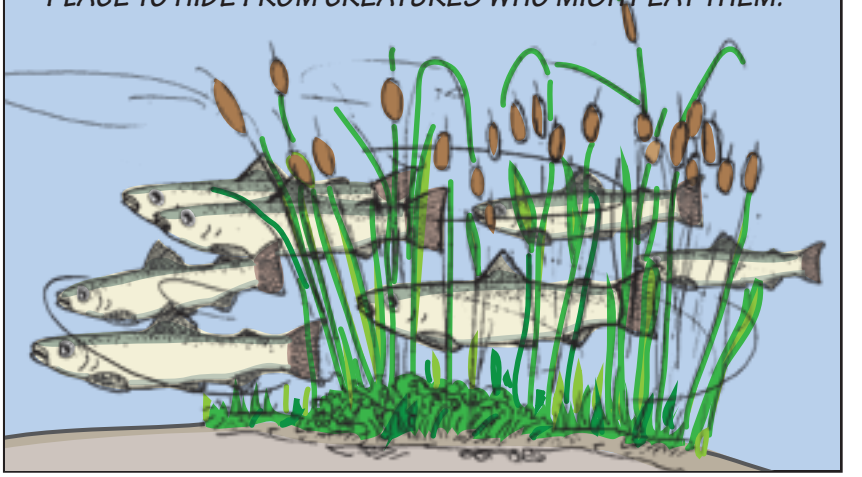
SALMON START THEIR LIVES IN RIVERS. THEN THEY SWIM MANY MILES OUT TO SEA BEFORE COMING BACK TO THE SAME PLACE THEY BEGAN. THEY NEED CLEAN, COLD WATER AND HEALTHY RIVERS, AND MANY GOVERNMENTS MUST WORK TOGETHER TO PROTECT THE PLACES WHERE THEY LIVE.

SALLY IS ONE OF THOUSANDS OF EGGS THAT HATCH FROM NESTS IN GRAVEL IN THE RIVER.



SALLY AND ALL HER BROTHERS AND SISTERS STICK TOGETHER AS THE RIVER CARRIES THEM DOWNSTREAM.

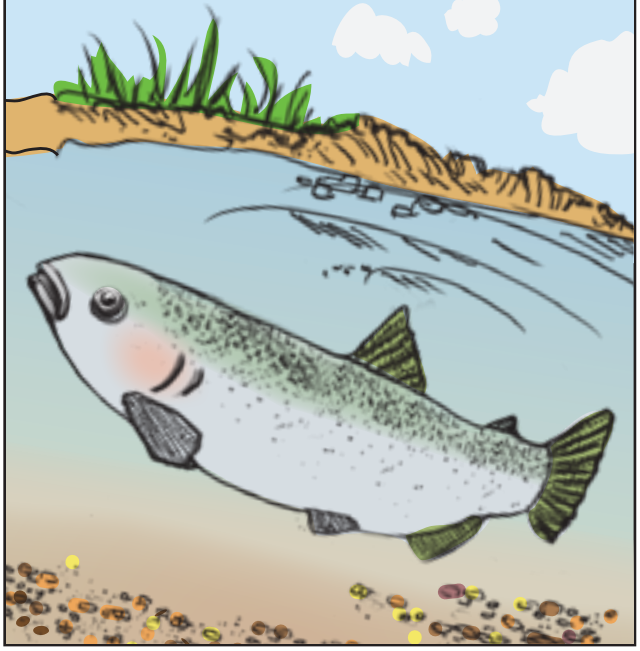
SALLY AND HER SIBLINGS FIND THEIR WAY TO CALM WATER IN A WETLAND WHERE THERE IS FOOD AND A PLACE TO HIDE FROM CREATURES WHO MIGHT EAT THEM.



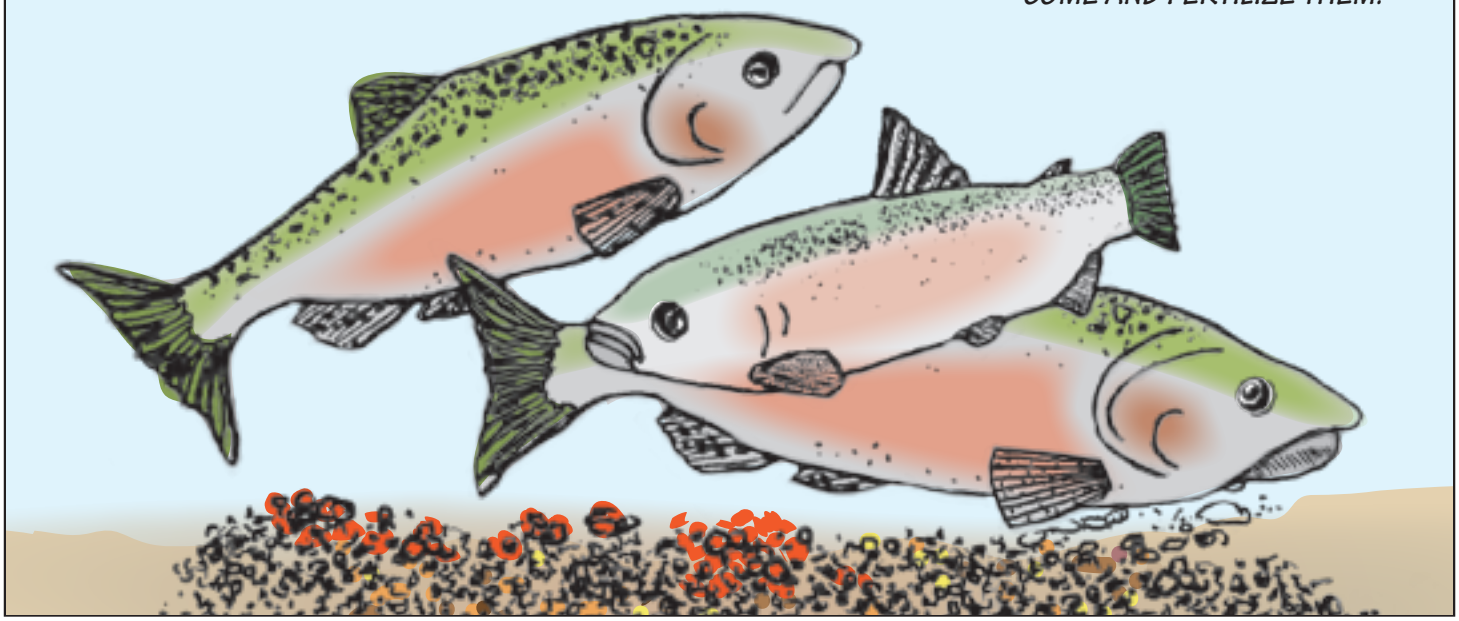
SOME KINDS OF SALMON GO OUT TO SEA QUICKLY, BUT SALLY IS A STEELHEAD—A KIND OF SALMON THAT STAYS IN THE RIVER FOR A YEAR OR MORE GROWING BIGGER.

SALLY AND HER SIBLINGS SPEND TIME IN THE ESTUARY, WHERE RIVER WATER AND SALTY SEAWATER MIX. IT TAKES SOME TIME TO ADJUST TO THE SALTY SEAWATER. THEN SHE HEADS OUT TO SEA.

IN THE NEXT TWO YEARS, SALLY SWIMS ALL THE WAY OUT OF PUGET SOUND, INTO THE PACIFIC OCEAN AND BACK AGAIN.



SALLY SWIMS BACK UP THE RIVER SHE CAME FROM. SHE FINDS A GOOD, GRAVELLY SPOT AND DIGS A NEST WITH HER POWERFUL BODY AND TAIL. SHE LAYS HUNDREDS OF EGGS, AND MALE SALMON COME AND FERTILIZE THEM.



MOST KINDS OF SALMON DIE AFTER THEY DO THIS, BUT STEELHEAD OFTEN LIVE TO REPEAT THIS PROCESS TWO OR THREE TIMES.

All art by MWillowsIllustration