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CHAPTER 8

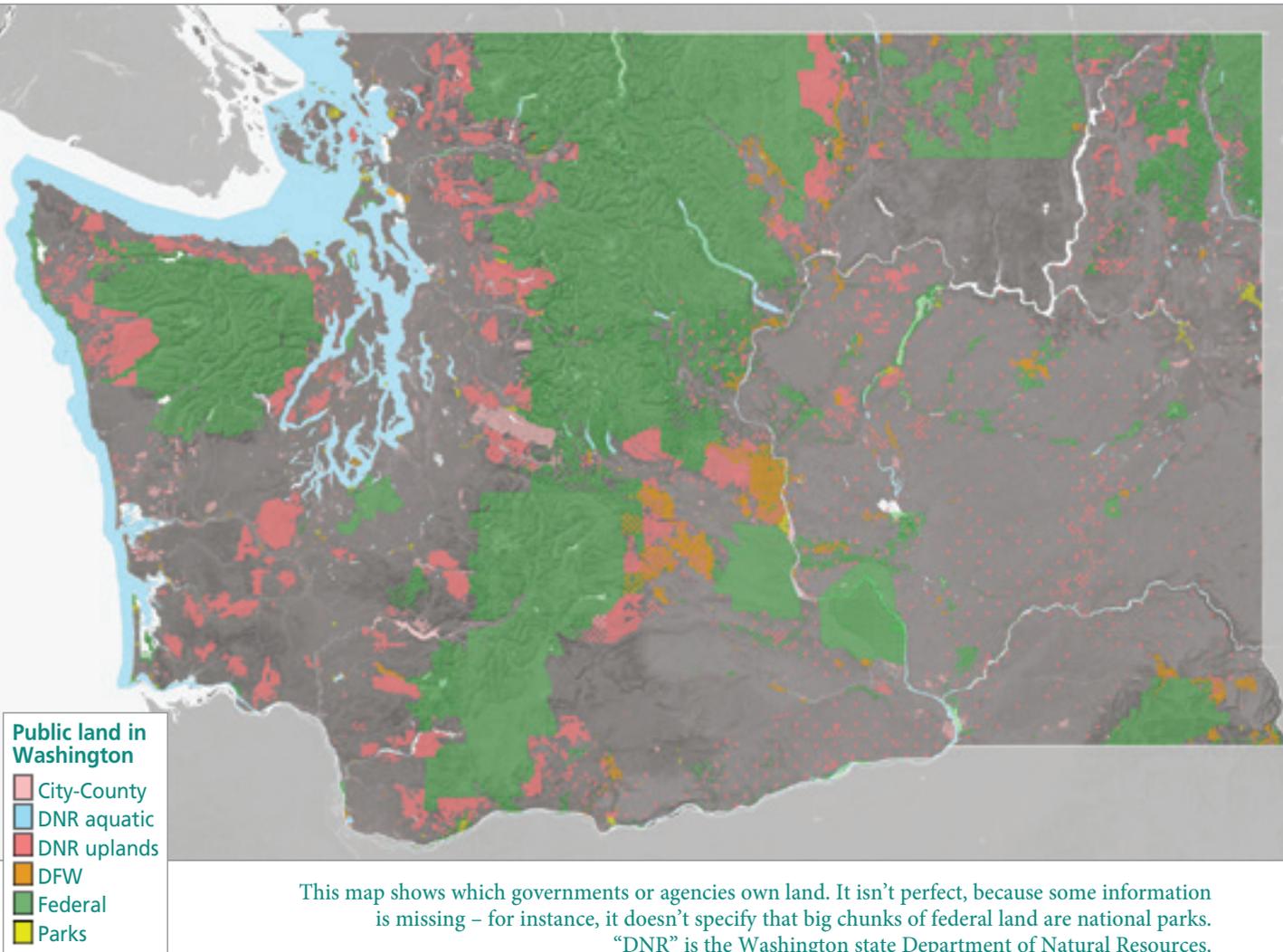
Civics and the natural world: land, air, water, plants, and animals

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We think of our government as being “of the people, by the people, and 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 various government agencies make.

visit interactive map at <http://publiclandsinventory.wa.gov/#Map>



This map shows which governments or agencies own land. It isn't perfect, because some information is missing – for instance, it doesn't specify that big chunks of federal land are national parks. “DNR” is the Washington state Department of Natural Resources.



photo courtesy/ Jaminne Horn, National Park Service

Mt. Rainier National Park is a great place for a hike, and for viewing alpine wildflowers in the summer.

You might think that if you're out camping in the wilderness or fishing in a lake, you have escaped the topic of civics. But 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 prairie, and every lake and stream.

This chapter is intended simply to give you a quick sampling of how civics and the natural world connect and to get you thinking about how these issues will affect your future.

Land

photo courtesy the Department of Ecology



Hanford was a major national site where plutonium was created for use in nuclear weapons. Now there is a long-term effort to clean up nuclear waste there.

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 very small amount was set aside for Indian reservations.

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 deeded it about 6.5 million acres.



photo courtesy Leslie Hoge Design

Tidelands near Quilcene are leased to shellfish growers.

The state earns money from 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 from these earnings to pay for government buildings, colleges and universities, and public schools.

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

The federal government owns nearly 13 million acres in Washington. Federal land is used for national parks (such as Mount Rainier National Park); national recreation 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 problem figuring out what to do with the pollution and nuclear waste there.)

On tribal reservations, some lands are held in common by the whole tribe. But most reservations are a combination of individually owned pieces of land (often owned by non-Indians) and land that is owned by the whole tribe. Some tribes are buying up individual



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



photo courtesy National Park Service

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 of it is set aside in Natural Area Preserves.

pieces of land when they come up for sale in order to return more control of their reservation to the tribe as well as to protect or restore their natural resources. Also, tribes or tribal members often own land that isn't on a reservation.

Local governments (including cities, counties, and school districts) also own land, usually for buildings, public utilities, parks and natural areas, and, of course, for streets and sidewalks.

People often disagree about how much land the government should own—especially the federal government. Some people think that if the land were privately owned and people were using it to make money, that this would produce more jobs and more tax revenue to support government. But as our population keeps growing, more people appreciate having wilderness areas, habitat for wildlife, and public land where anyone can hike, camp, hunt, and fish as well as see wildflowers, scenic rivers, birds, bees, bears and beavers.

Air

Since 1970, the air we breathe has become a hot topic for federal, tribal, state, and local governments. In that year, a national grassroots movement to protect the natural world from pollution celebrated the first “Earth Day.” On April 22, hundreds of thousands



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.

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 and all living things 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. The Act spelled out how much air pollution industries and cars should be allowed to produce and assigned states the job of creating plans to achieve the goals of the Act. The federal Environmental Protection Agency—which was also created in 1970—had to approve each state plan.

Also in 1970, the Washington 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 create a state plan to make sure all areas of our state meet federal standards for healthy air. They create regulations that individuals, industries, farmers, trucks, and cars have to follow to limit pollution.

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,

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.

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 conditions.

Other sources of haze and air pollution include wood-burning stoves and fireplaces, airplanes, ships, motor vehicles, 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. As our state's urban areas grow, 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.

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. The last coal-fired power plant in the state, it's 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 contributed to the decline of fish in the rivers.)

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 continues to be celebrated all over the world as Earth Day.

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 Erik Bakke

Water

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
- 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

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.

Dam!

Over two-thirds of the electricity we use in Washington comes from the power generated by water rushing over dams, which is called hydroelectric power. This is a mixed blessing. The wonderful thing about hydroelectric power is that it doesn't produce any air pollution, as power plants that burn coal, oil, or natural gas do. (Most states use much more electricity produced by burning these fossil fuels.) Another benefit is that dams store a lot of water in the big lakes that form behind them. That water can be used for irrigating crops in the summer when there's little or no rain.

But the bad thing about dams is that they often block salmon when they try to swim to and from the sea. The Bonneville Dam, a huge dam on the Columbia River, has fish ladders that help at least some of the fish go around the dam. But another big dam, the Grand Coulee, is a dead end for fish because it has no fish ladders.



This photo was taken in 2005, when the two dams on the Elwha were blocking 100 years worth of sediment.

In one river, the value of fish finally won out over the value of hydropower. Two dams were built in the early 20th century to generate electricity on the Elwha River near Port Angeles. Once the dams were built, they blocked fish from 81 miles of river habitat above the dams. The number of fish plummeted. This was devastating to the Klallam Tribe, because the Elwha River was famous for its abundance of big, beautiful salmon and other species of fish, and the tribe had relied on those fish since time immemorial.

After many years of advocacy by the tribe and other people, a federal law was finally passed calling for removal of the dams. The law was passed in 1992, and by the end of 2014 the dams were finally gone. The Lower Elwha Klallam Tribe and many other people are now celebrating the return of fish to the upper reaches of the river.

They are also witnessing the expansion of a lovely beach where the river meets the Salish Sea. This is happening because all the sediment that usually flows down rivers had been trapped behind the dams. Now that the beach is back, crabs and many other species of sea life are also returning.



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

Go Play Outside!

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 tests of blood pressure, brain function, and heart rate showed proof of the same effects that poets have written about for centuries: being outdoors makes us calmer and healthier, more able to think clearly and remember things, and less likely to be 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 C. Bubar, National Park Service

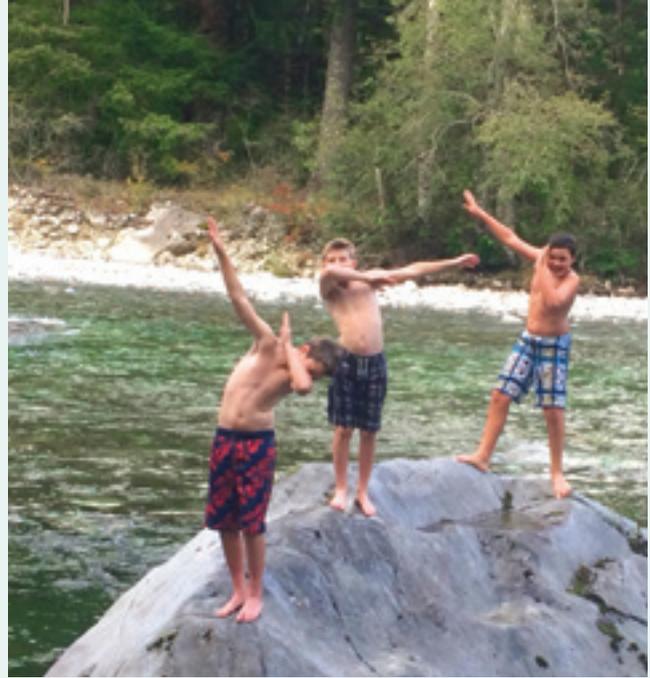


photo courtesy Patti Coats

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.



What matters in the world of civics is that managing water wisely requires sensible government policies based on sound science. This is one of many examples of why citizens need a good education in science.

It would triple the size of this book to include all the important policy issues about water. 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. Tribes also have water rights that were reserved in the treaties they signed. Also, because tribes were promised the right to fish, they have a major stake in ensuring that rivers and streams have enough clean, cold water to sustain the fish populations they depend on.

Holders of water rights aren’t supposed to waste water; they are required to use it for a beneficial purpose, such as crop irrigation, supplying homes and businesses, or for commercial or industrial facilities. Water rights can’t be taken away unless the water is being wasted, or not used, or if there is some other violation of the law. One basic principle of a state-granted water right is “use it or lose it.”

However, people who live in an area with no public water system can drill a well and use up to 5,000 gallons a day. Such wells are called “exempt wells,” and they are subject to different water laws than the one that requires getting a permit. The average homeowner uses about 300 gallons of water a day, but the total amount used by people with exempt wells has become very large as our population has grown.

And here’s the problem: Some areas of the state may not have enough water for more wells. In fact, there are many areas where more water rights have been granted than there is water to supply them.

The state Supreme Court upset a lot of people in 2016 when it ruled that before counties can issue building permits for more houses that will need new wells, they have to show that the new wells won’t reduce the water flowing into streams or take water away from those who already have water rights.

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.

For some people who buy a piece of land and want to build a house, this Supreme Court ruling is a disaster. If a landowner can't drill a well, they can't build a house, because they can't live without water. If someone just spent their life savings to buy the land, it's no wonder this ruling would make them upset.

But other people welcome this ruling because they believe it will result in more protection for the fish and wildlife that depend on healthy rivers and streams.

As you can imagine, this Supreme Court ruling caused a huge uproar. The state legislature wrestled with this issue in 2017 but couldn't agree on a solution. (You may want to find out the latest news about this ruling and how it affects your county.)

Other issues about water are just as complex and difficult. Yet as tribes have said for a long time, "water is life." Nothing lives without it. No issue is more important than governing our use of water wisely, fairly, and with an eye toward the future.

Slimy slugs help the forest by eating dead leaves and animal droppings and turning that into nutrients for the soil.



photo courtesy J. Preston, National Park Service

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 freshwater and marine fishes, 25 amphibians, 21 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 these creatures are in danger of extinction. The population of resident orcas, for instance, is declining because there aren't enough salmon for them to eat, and several have died from starvation.



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

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 reestablished 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.

There are many species of plants and animals in our state that the federal government lists as “endangered” or “threatened” with extinction. At the same time, there are many plants and animals that are considered “invasive.” These include both plant and animal species that were imported in one way or another from other places and which have grown so much they are pushing native species out of their homes.

photo courtesy Kourtney Stonehouse, Washington Department of Fish and Wildlife



The endangered Pygmy Rabbit is not much bigger than a kitten.

photo courtesy the Department of Ecology



photo courtesy Thurston County Noxious Weed Board

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

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 getting reestablished.

These examples are just a tiny sample of the challenges of living in harmony with the thousands of creatures great and small. And each of these challenges requires a response from both government agencies and ordinary citizens.

In the case of endangered whales, federal, tribal, state, and local governments are working to save the salmon that the whales need for food and to clean up the pollution in Puget Sound. Many citizen advocates and organizations are also deeply involved in this work.

Pygmy rabbits have been captured and bred in a special program at the Oregon Zoo and then reintroduced into their native habitat. This has taken a lot of time, trial and error, and expense.

In the case of invasive species, 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 specialize in combating invasive plants.

There are also many other issues relating to wildlife. We see more reports of black bears roaming suburban neighborhoods that have been built in what used to be their habitat. And as climate change has led to milder winters, urban rats have been able to breed year round, causing increases in urban rat populations.

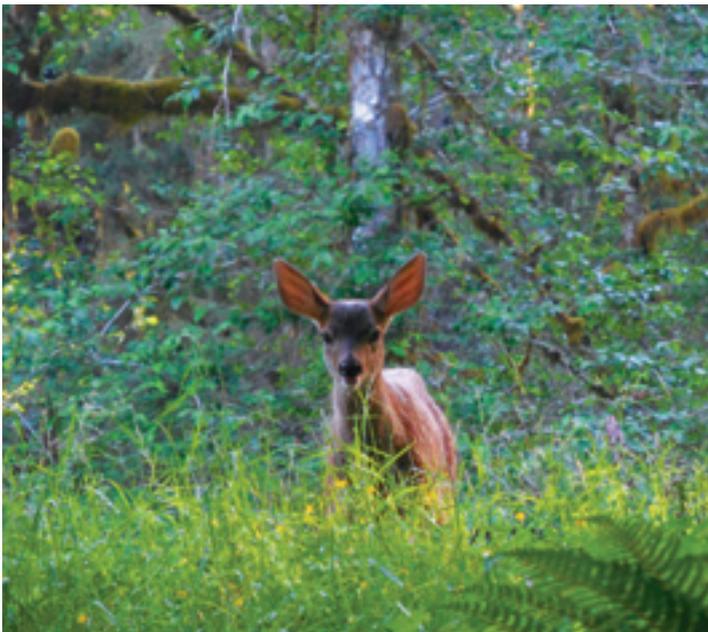


photo courtesy C. Bubar, National Park Service



photo courtesy Jason Wettstein, Washington Department of Fish and Wildlife

Government policies and citizen actions are vital to finding ways to deal with all these issues. 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, colleges, and vocational programs), and maintaining our infrastructure (roads, sewers, and water supplies).

Everyone agrees that investing in parks and public lands, protecting air and water quality, and preserving wildlife habitats are very important, but they are often lower priorities.

Many citizen advocacy organizations lobby governments to do more, and they are backed up by scientists and even economists who make an ever-stronger case for investing in care of the natural world, which, after all, sustains all species, including us.

But when money is short, elected leaders often have to choose between cutting spending for schools or spending money to preserve habitats for wildlife or other natural resource priorities.



photo courtesy Justin Haug, Washington Department of Fish and Wildlife

Sally the Steelhead Salmon, a biography

Sally the Steelhead Salmon hatched early one spring from a tiny egg in a gravel nest in the Nisqually River. She was one among hundreds of siblings and thousands of others who hatched from nearby egg nests.

This is the story of Sally's life and all the things governments and people have done to make her life easier, as well as all the things they've done to make it harder.

Sally was lucky to start her life in the Nisqually River because it is one of the healthier salmon streams in Washington. It flows from a glacier on Mount Rainier into South Puget Sound. For many years, the Nisqually Tribe, citizen organizations, and government agencies have worked to restore and protect the river.

Sally hatched in clean, cold water just below Alder Dam and the LaGrande Dam powerhouse. The city of Tacoma built the dams in the 1940s to produce electricity. Dam operators used to release huge amounts of water all at once, which washed salmon eggs out of the gravel and hurled tiny fish like Sally down the river so fast they were killed. In the 1970s, the Nisqually Tribe sued the city of Tacoma to get them to stop doing this. Now, a federal government agency that licenses the dams makes sure that the dam operators consult with the Nisqually Tribal government and the state's Department of Fish and Wildlife to manage the flow of water and protect the fish.

As a tiny fish, the water that Sally swam in was clean and cold because the Washington State Department of Ecology enforces the federal Clean Water Act. Together with the Pierce and Thurston County governments, they work to prevent sewage or pollution from nearby farms, houses, or businesses from seeping into the river.

As a very small fish, Sally was never alone. She traveled with a group (called a school) of other young fish, who helped each other by watching for predators. She and her

school struggled in the fast-moving river. They needed to be in calmer water, where they could find food and hide from birds and bigger fish who would like to eat them for lunch. Luckily, they found a side channel that led into a wetland, where they could hide among tall grasses that grew in the water and find insects and other tiny creatures to eat. Sally and her school spent several months there, just eating and growing.

The wetland where she grew was protected by the state Department of Ecology and by a county Critical Areas Ordinance, which keeps people from harming important fish and wildlife habitats.

Eventually, Sally became bigger and stronger, and she ventured back into the main river, swimming downstream. As she got closer to the estuary where the river flows into Puget Sound, the water began to change. Because the freshwater of the river meets the salt water of Puget Sound, Sally had to make a big adjustment to the salty water.

But she was in no hurry to leave the many acres of estuary, because it was a glorious cafeteria for fish, full of nice places to hide from predators and a large variety of tiny creatures to eat. In fact, most of the Nisqually estuary is in the Billy Frank Jr. National Wildlife Refuge, which was created in 1974. Before that, the estuary had been through many years of hard times.

In 1904, a farmer had built a dike that channeled the river straight to Puget Sound, cutting it off from the rich area where Sally now swam. The dike held back the tide from the estuary so the farmer would have more land to raise dairy cattle.

In 1970, a group of citizens started the Nisqually Delta Association, which worked to preserve the area. Earlier, there had been talk of using some of the land near the river as a landfill (which is a nice name for a garbage dump). There had also been talk of making it into an industrial port, similar to the ones in Tacoma or Seattle. The association lobbied for and helped win passage of the state Shoreline Management Act and helped create the wildlife refuge. After that, they succeeded in preventing log and gravel export facilities from being built on the edge of the estuary.

In 2009, the Nisqually Tribe and several other government agencies and citizen organizations succeeded in getting the old dike removed. That was another huge step in restoring the rich tideflats and wetland areas that nurture fish like Sally and many other species of fish, birds, and amphibians, as well as the millions of tiny creatures they eat.

Sally surely didn't know this, but she benefited from all those years of people working as she swam peacefully around the estuary, eating and growing bigger and stronger. Because she was a steelhead, it was in Sally's nature to spend over a year in her native river system before heading out to sea.

But eventually the urge to migrate came, and she headed out of the relative safety of the estuary into Puget Sound. There she found new challenges. She had to search harder for food and cope with more pollution from storm water and sewer plant outfalls.

A host of tribal, local, state, and federal agencies are all involved in trying to restore, protect, and enhance the water quality of Puget Sound. This is extremely difficult and complicated work because the (human) population around the Sound keeps growing. That means more pavement and more pollution. And there is never enough money to pay for all the projects to restore damaged coastlines and to prevent pollution from reaching all the rivers and streams that flow into the Sound.

Still, Sally headed north. She swam past Tacoma, Seattle, and Everett, and then took a left turn into the Strait of Juan de Fuca. Her instincts led her right out into the open ocean, where she turned right and headed north toward Alaska.

Now her survival depended on the ocean temperature—she needed it to be cold—and on the ocean currents, the availability of food, and on the chemistry of the water itself.

In this phase of her life—which lasted nearly two years—her success was the concern of the many scientists who work for the National Oceanic and Atmospheric Administration. They monitor ocean conditions, studying changes in water temperature, increasing acidity, and changes in currents and weather patterns. Still, there is a lot of mystery about Sally's life in the open ocean.

Eventually, when she had grown big and strong, Sally began to feel an overpowering urge to come home to the Nisqually River. She turned south. And once again, lots of government agencies were concerned about her. The tribes, the state, and the governments of both the U.S. and Canada are all involved in deciding when, where, and how many fish can be caught. Their goal is always to allow enough fish to come home and lay eggs to ensure the survival of the species.

These are tough decisions to make, because even the experts don't know all the factors that affect salmon survival in the ocean and on their journey home. This is especially important now because many of our native salmon runs are threatened with extinction, partly because of past overfishing, but mainly because of pollution in Puget Sound and damage to their river habitat. Sally the Steelhead is among the species that are threatened.

But Sally was a very fortunate fish. Led by her powerful instinct and an amazing sense of smell, she found her way back home to the Nisqually River. Now she was on a mission.

She is strong and powerful enough to swim upstream for many miles without stopping to eat. A few other steelhead who survived their hazardous journey are now swimming with her, and several males follow her closely.

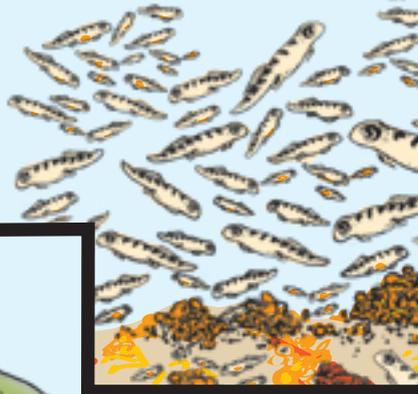
When she reaches the place she came from, she is exhausted, but she uses every remaining ounce of energy in her body to sweep away gravel and create a nest in which she expels a thousand or more eggs. Males fight to get close enough to fertilize the eggs.

And so the cycle begins again. Most salmon die after this upstream journey, but some steelheads survive, return to the sea, and come back to spawn again. We can never know whether Sally is now among them, but we can hope so . . . and we can keep working to protect the habitat that would make her next journey a success.

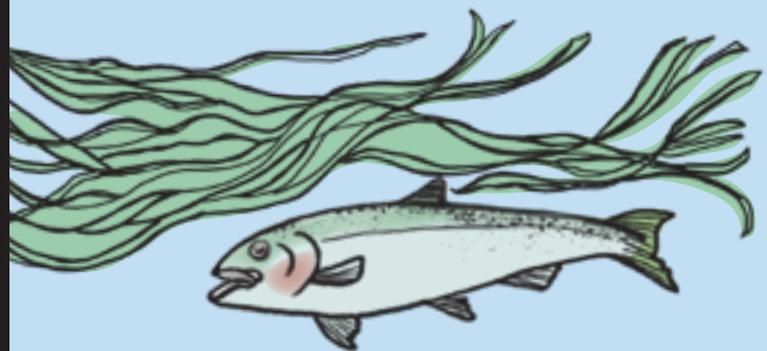
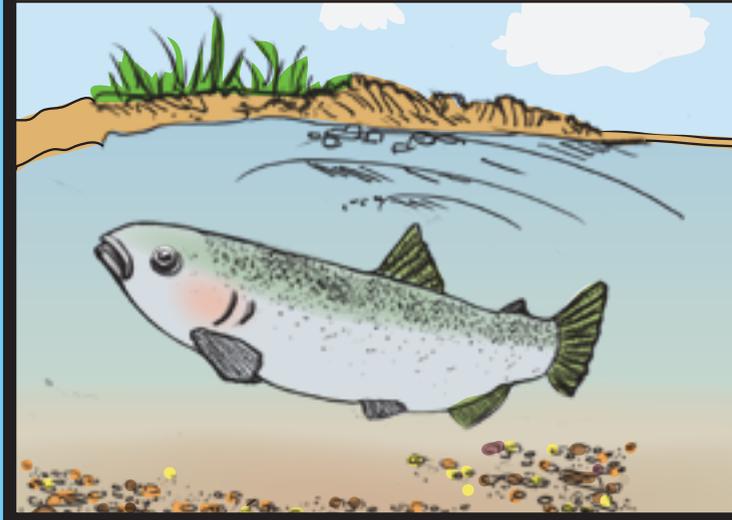
SALLY SWIMS UPSTREAM IN THE NISQUALLY, MAKES A NEST AND LAYS HER EGGS. MALE STEELHEAD ARE EAGER TO FERTILIZE THEM.



SALLY IS ONE OF THOUSANDS NESTS IN GRAVEL

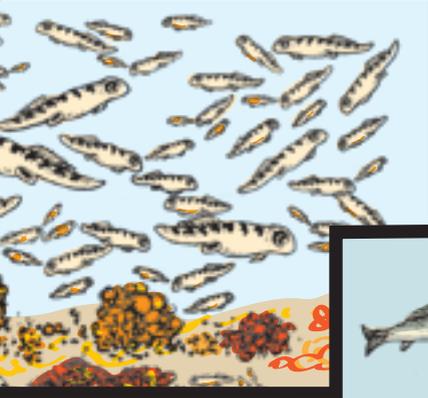


SALLY SURVIVES HER LONG AND DANGEROUS JOURNEY THROUGH PUGET SOUND, INTO THE PACIFIC OCEAN, AND BACK AGAIN.

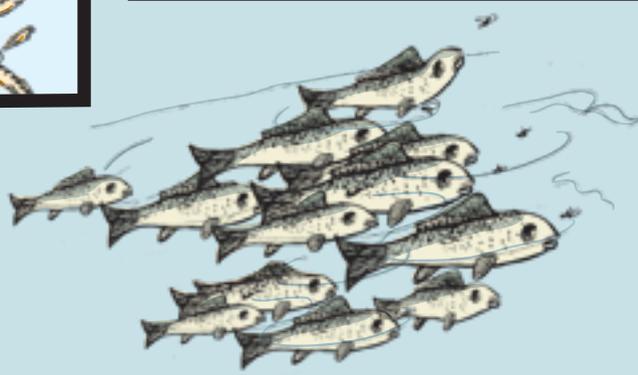


SALLY SPENDS TIME IN THE ESTUARY, WHERE FRESHWATER AND SALTWATER MEET. FINALLY, SHE IS READY FOR HER BIG ADVENTURE, AND HEADS OUT TOWARD THE OCEAN.

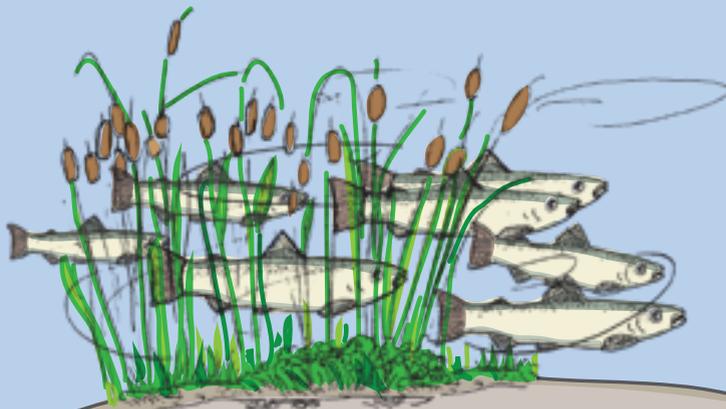
OF EGGS THAT HATCH FROM
IN THE RIVER



SALLY STICKS TOGETHER WITH OTHER TINY
FISH FOR SAFETY, AND HEADS DOWNSTREAM.



SALLY AND HER SIBLINGS FIND THEIR WAY TO CALM WATER IN A
WETLAND WHERE THERE IS FOOD AND SAFETY FROM PREDATORS.



SALLY AND OTHER YOUNG STEELHEAD LINGER IN THE RIVER FOR
A YEAR OR MORE, GROWING BIGGER AND STRONGER.

