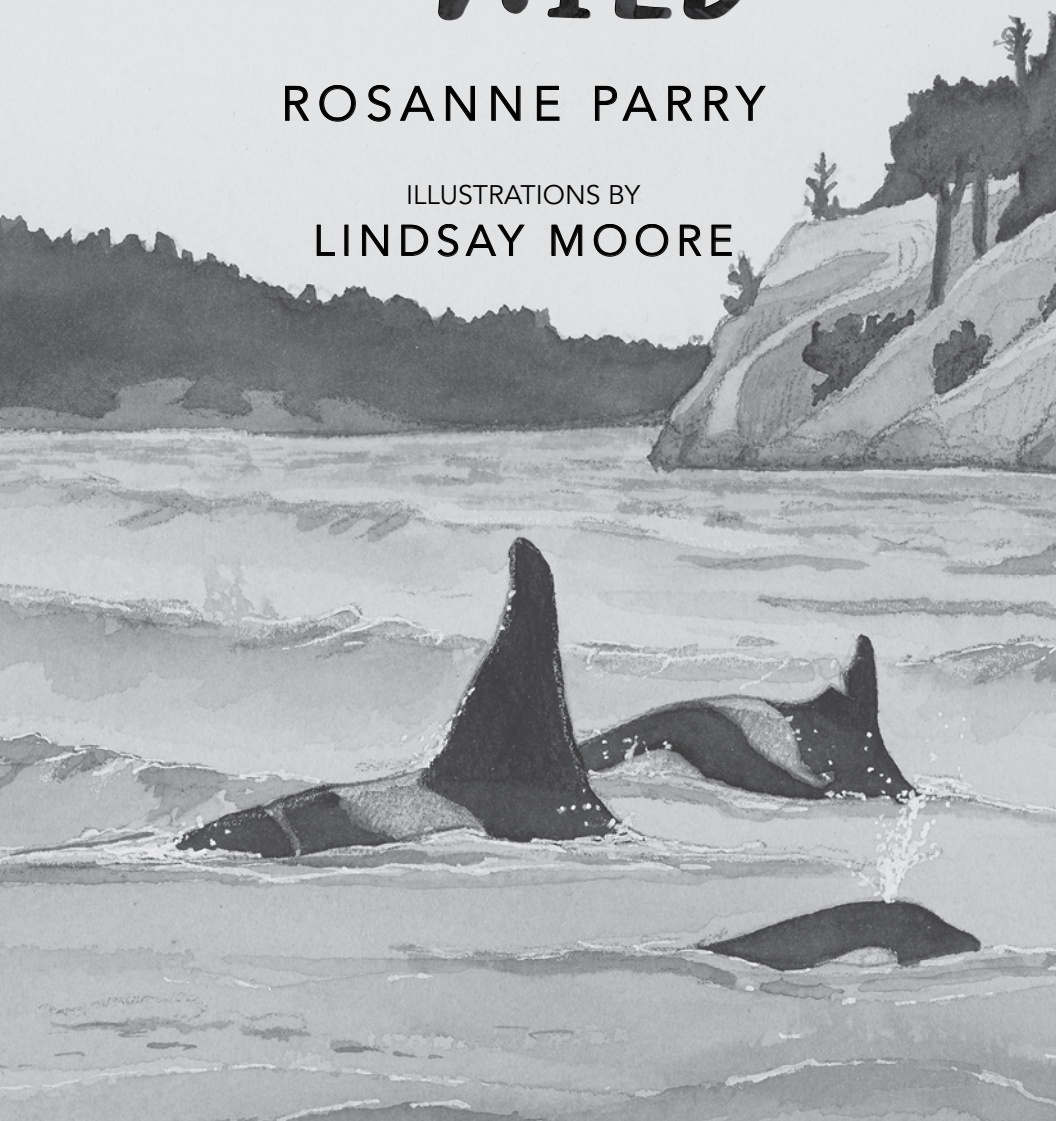


A WHALE OF THE WILD

ROSANNE PARRY

ILLUSTRATIONS BY
LINDSAY MOORE



Thank you to Katie Jones at the Center for Whale Research, for answering my questions about orcas. I also want to acknowledge The Whale Museum for their wonderful educational displays and the SeaDoc Society for all the information and outreach they provide to the public about the Salish Sea. And thank you to Rosanne Parry for writing a beautiful story about orcas, something my ten-year-old self would have dreamed to illustrate.—Lindsay Moore

This book is a work of fiction. References to real people, events, establishments, organizations, or locales are intended only to provide a sense of authenticity, and are used to advance the fictional narrative. All other characters, and all incidents and dialogue, are drawn from the author's imagination and are not to be construed as real.

A Whale of the Wild

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Map by Elizabeth Person

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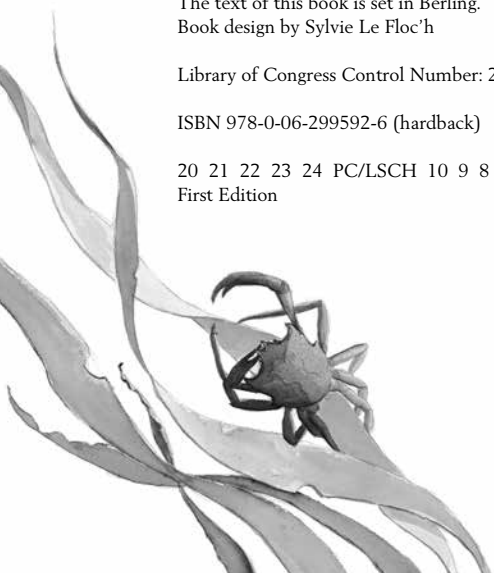
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First Edition



THE SOUTHERN RESIDENT KILLER WHALE COMMUNITY

Orcas—also known as killer whales—live in communities in every ocean in the world. Each community has its own prey animals and hunting strategy. This story was inspired not by a single orca but by the entire Southern Resident Killer Whale (SRKW) community of the Salish Sea. The SRKWs spend part of each year in the inland waters of the Salish Sea and part of the year along the western coast of North America. They are among the most urban of all cetaceans because the shores of the Salish Sea are home to eight million people. Orcas have been the subject



After a meal, a female orca breaches

of human art and story for many thousands of years, and SRKWs have watched the region grow from a thriving center of indigenous trade carried out in large cedar canoes to a busy international shipping region, a prime fishery, the home of naval and submarine bases, and a treasured vacation destination. They share their home with the Northern Resident Killer Whale (NRKW) community who, like their southern neighbors, eat fish—primarily salmon. Though the NRKW have much in common with the SRKW group, they do not speak the same language or socialize with one another.

A third community of killer whales shares the waters of the Salish Sea; they are called Bigg's Killer Whales or Transients. They also speak their own language and



A pod of orcas in a busy harbor-

mate only with their own. The Transients don't eat fish but instead hunt seals, porpoises, and other marine mammals—even whales.

There is also an Offshore community of killer whales, distantly related to the SRKW population but distinct in its



An orca breaches in the Salish Sea

language and hunting patterns. Little is known of this community because they range widely in the Pacific Ocean and are hard to find. They tend to travel in large groups and eat mostly squids and sharks.

Though in my story I have imagined a few moments of fellowship between these distinct orca communities, the lengths orcas go to avoid orcas from other communities is quite remarkable to those who observe them closely. Aggression between orca communities is extremely rare.



VEGA'S SALISH SEA

70 MILES

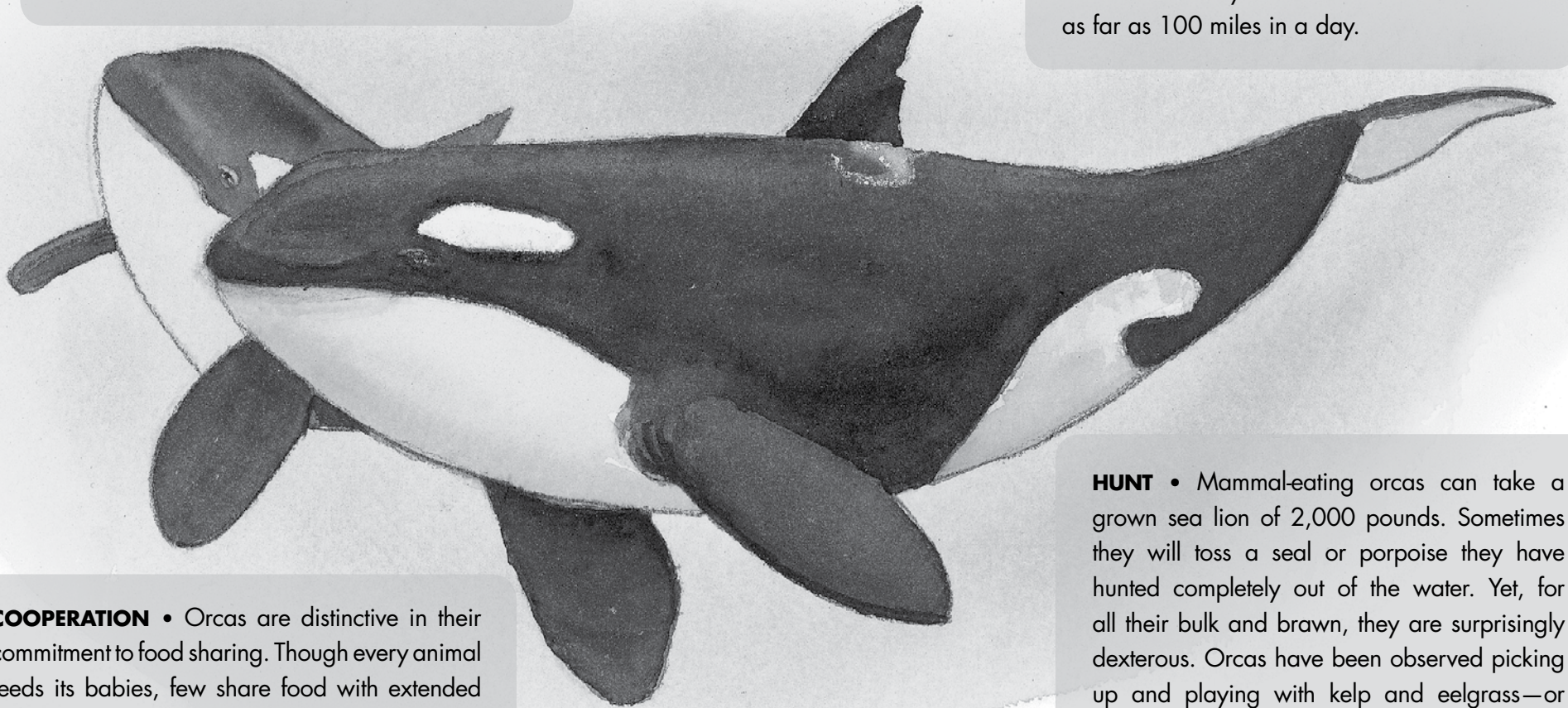
LABELS ARE THE ORCAS' PLACE NAMES, AS IMAGINED IN THIS BOOK

ABOUT ORCAS

LIFE • Orcas have a lifespan similar to humans. It takes them at least a dozen years to reach their adult size. They start having babies in the mid-to-late teens. They stop having babies in their forties or fifties, and we estimate they can live to be ninety, maybe even one hundred years old.

SIZE • Orcas are the largest members of the dolphin family. At 16–26 feet long, they are about as big as a triceratops.

SPEED • Orcas hunt with astonishing speed. They can sprint as fast as 30 miles per hour and dive more than 1,000 feet down, though they spend most of their time much closer to the surface. They have been known to travel as far as 100 miles in a day.

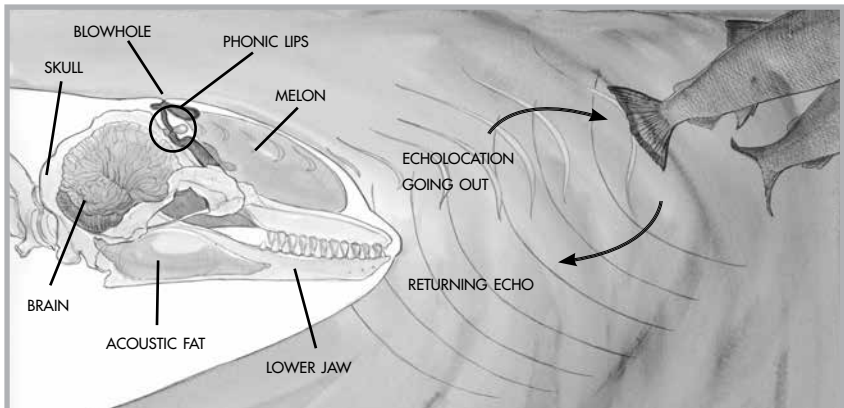


COOPERATION • Orcas are distinctive in their commitment to food sharing. Though every animal feeds its babies, few share food with extended family for their entire lives the way orcas do.

HUNT • Mammal-eating orcas can take a grown sea lion of 2,000 pounds. Sometimes they will toss a seal or porpoise they have hunted completely out of the water. Yet, for all their bulk and brawn, they are surprisingly dexterous. Orcas have been observed picking up and playing with kelp and eelgrass—or even something as small as a single feather.

ORCA COMMUNICATION

Orcas communicate with each other using calls and whistles that are produced by squeezing the air that comes through their blowholes with a pair of phonic lips, making it possible for them to talk with their mouths full. They make echolocation clicks using the same apparatus. The clicks are also shaped by the *melon*, the mass of fatty tissue that gives the orca its distinctive rounded forehead. The orca's melon acts as a sound lens. The sounds move through the melon and out like ripples on a pond. Objects in the water, such as fish, bounce the sound back to the orca. The returning sound is picked up by sound-conducting structures in the lower jaw of the orca and transmitted to the inner ear and the brain, which translates those sounds into the shape of the object ahead.



ORCA TEETH

Here is a life-sized picture of an orca tooth. The teeth are impressively sharp and can cut through the tough hides of seals and sea lions with ease. And yet in the entire history of humans living around the Salish Sea, there is no record of a wild orca ever harming a human.



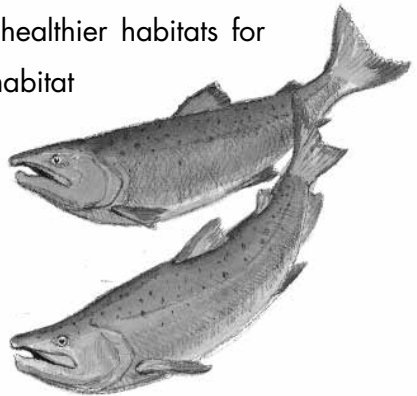
ORCA FAMILIES

- Orcas are matrifocal, which means that their social lives are structured around the leadership of mothers. Most orcas in the southern resident community will spend the majority of their lives with their mothers—this is true for sons as well as daughters. The community relies on the matriarch's memory and navigational ability to find salmon and avoid danger.
- These extended orca families are called pods. When prey is scarce, a pod might divide into smaller groups, but when salmon are plentiful orca pods gather. Historically the SRKW pods all returned to the Salish Sea for the summer salmon runs. They greeted each other with enthusiastic chirps and whistles. They sometimes lined up and swam toward one another at first meeting, and then mingled, touching one another gently, leaping and splashing together in what appeared to be great joy. These summer meetings are less frequent now that the salmon runs are so much weaker.



SALMON

- Salmon are the keystone species of the Salish Sea. They bring nutrients from the ocean into the rivers and back to the mountain forests where they were born. They feed many animals along the way—and even the trees of the forest. Salmon depend on feeder fish like smelt and herring, who in turn rely on plankton. All these creatures rely on clean, cold, oxygen-rich water.
- The salmon runs of today contain many fewer fish than in years past, and the salmon are much smaller than they were only a few generations ago. Salmon are threatened by global warming and pollution just as orcas are. They have been overfished, and many dams block access to the streams where they once laid eggs. Careful management is needed to restore streams and rivers and allow the salmon to thrive again. Fortunately many people, particularly the indigenous people of the area, are working hard to create healthier habitats for salmon. Much work remains, but habitat restoration *is* possible.



THE FIRST NATIONS OF THE SALISH SEA

The Salish Sea was named for the language of the Coast Salish people, who live along its shores as they have for many thousands of years. More than sixty tribes in Washington and British Columbia call the Salish Sea home. Though each tribe has its own history and traditions, they share many similar cultural practices. They express a deep respect for the water and the earth, and their lives are traditionally centered around the seasonal rhythms of the returning salmon.

For the last thirty years the tribes of the Salish Sea have celebrated an annual Canoe Journey, one of the largest indigenous gatherings in North America. Canoe families from all over the Salish Sea region gather at the host nation's home waters for a celebration. They invite communities from all the canoe-making cultures of the Pacific: First Nation Canadians, Alaska Natives, Hawaiians, Maori, Papuans, and many others. The celebration takes place over several days in the summer and includes greetings in each tribe's language, feasts, singing and dancing, canoe races, and ceremonies. The

communities share information both about their history and about the modern environmental problems that are putting lives in danger.

The tribes of the region have been powerful advocates for policies that would protect and restore the Salish Sea. Their scientists have provided research and innovation based in traditional resource management, which has benefitted fishery management worldwide. They have spent much of their time and resources restoring damaged rivers and removing dams that harm salmon. Many of these tribes count the orcas as their kin; the orcas are fortunate to have such skilled advocates.

THE HABITATS OF THE SALISH SEA REGION

Vega and Deneb traveled hundreds of miles through the waterways, inlets, and coves of the Salish Sea; over the edge of the continental shelf; and into the deep ocean before returning to their home waters.

INLAND SEA

The **Salish Sea** is one of the largest and most biologically diverse inland seas in the world. It lies along the coast of Washington State in the US and British Columbia in Canada. The sea contains 419 islands and more than 4,600 miles of coastline. It gets its name from the Coast Salish tribes who have always lived along its shores since the glaciers of the last ice age retreated, leaving deep fjords, whaleback-shaped islands, and a network of rivers that bring a steady supply of nutrient-rich silt to the sea. Those nutrients form the base of a food web that includes thousands of species of marine invertebrates, fish, birds, and mammals, including the eight million humans who live along its shores.



The **giant Pacific**

octopus is the

largest octopus in the

world. It can grow to

be almost 30 feet from

the tip of one tentacle

to another. The suckers on

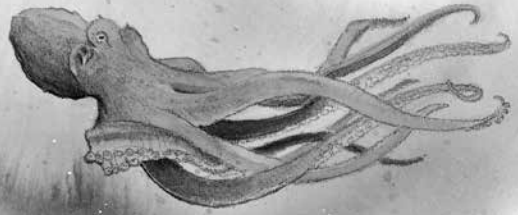
its eight legs are used to grip things and also for tasting

and smelling. It has three hearts and nine brains—a main

central brain and one in each leg. Octopuses are highly

intelligent, brilliant at camouflage, and live almost entirely

solitary lives.



The **gray whale** is a baleen whale, meaning that

it feeds by filtering its food through long baleen

plates in its mouth. Gray whales specialize in

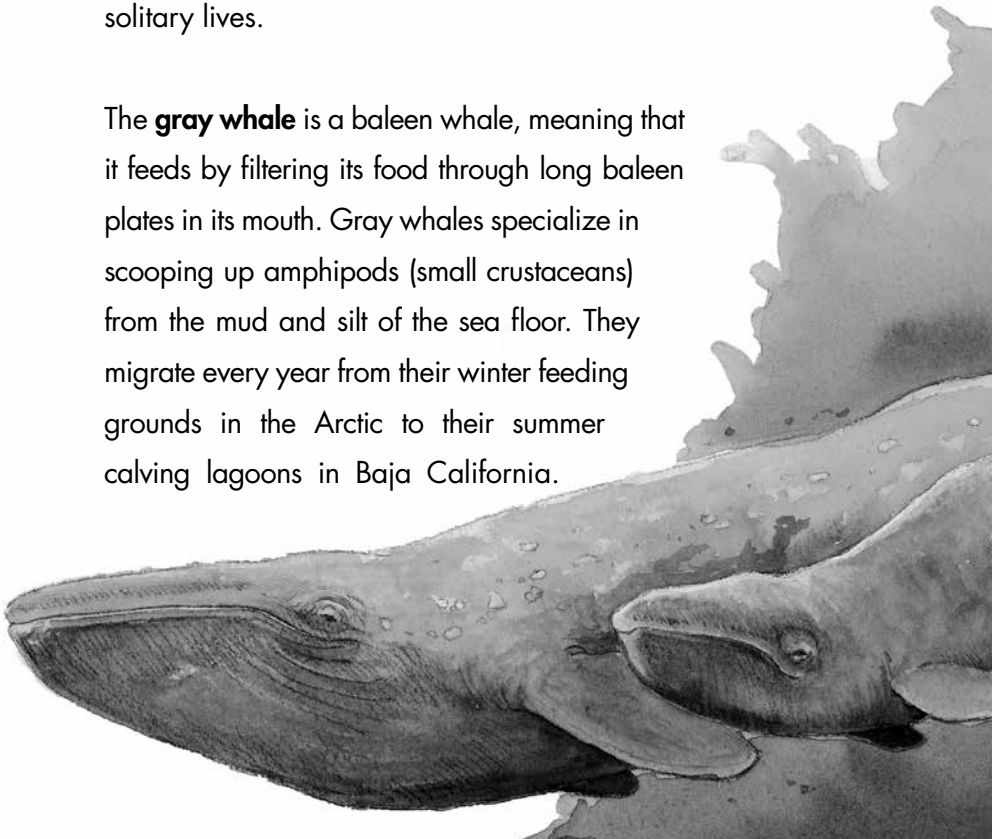
scooping up amphipods (small crustaceans)

from the mud and silt of the sea floor. They

migrate every year from their winter feeding

grounds in the Arctic to their summer

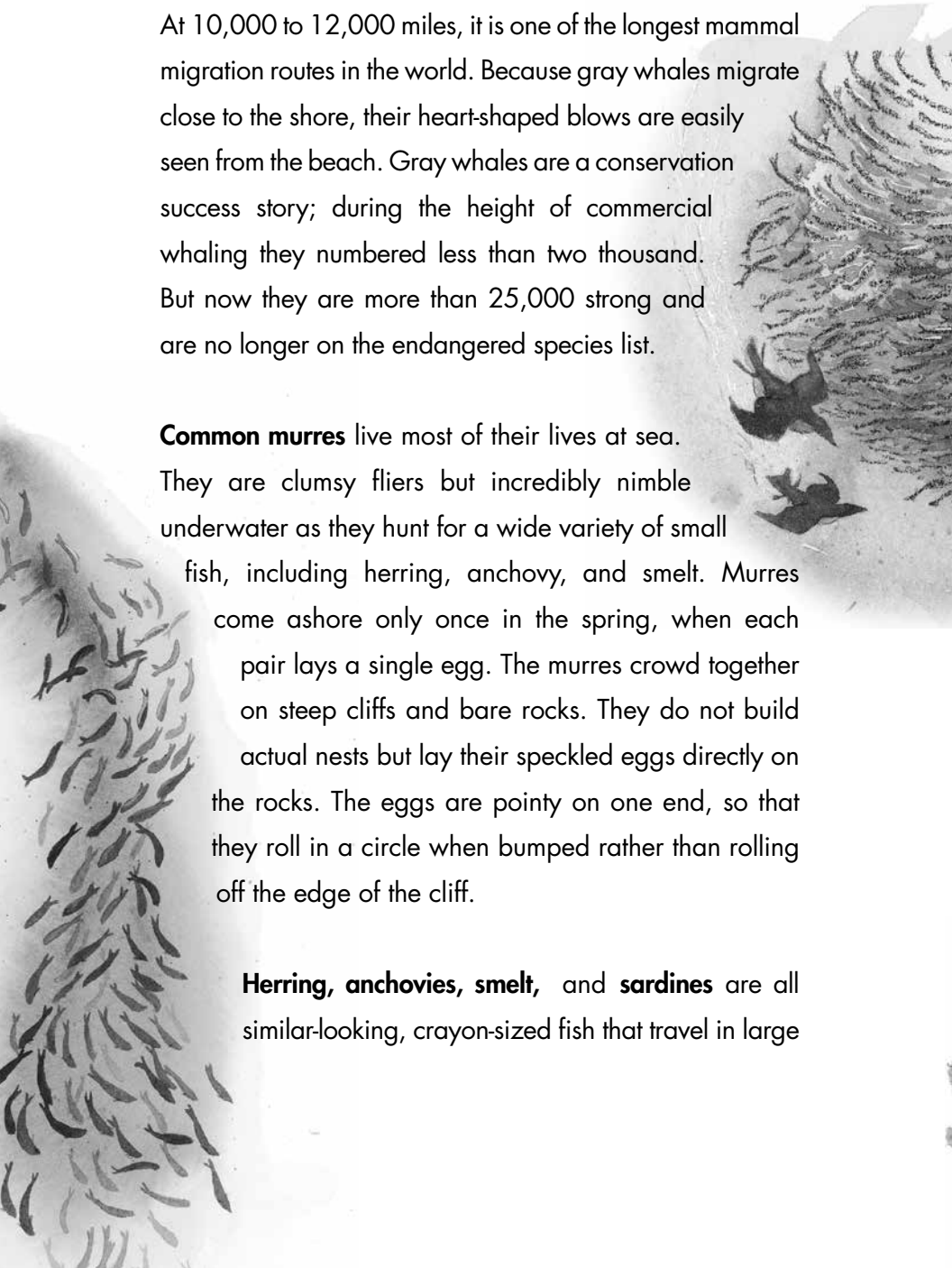
calving lagoons in Baja California.

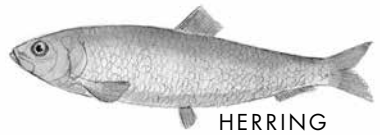


At 10,000 to 12,000 miles, it is one of the longest mammal migration routes in the world. Because gray whales migrate close to the shore, their heart-shaped blows are easily seen from the beach. Gray whales are a conservation success story; during the height of commercial whaling they numbered less than two thousand. But now they are more than 25,000 strong and are no longer on the endangered species list.

Common murres live most of their lives at sea. They are clumsy fliers but incredibly nimble underwater as they hunt for a wide variety of small fish, including herring, anchovy, and smelt. Murres come ashore only once in the spring, when each pair lays a single egg. The murres crowd together on steep cliffs and bare rocks. They do not build actual nests but lay their speckled eggs directly on the rocks. The eggs are pointy on one end, so that they roll in a circle when bumped rather than rolling off the edge of the cliff.

Herring, anchovies, smelt, and **sardines** are all similar-looking, crayon-sized fish that travel in large





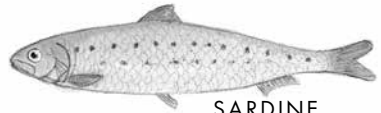
HERRING



ANCHOVY



SMELT



SARDINE

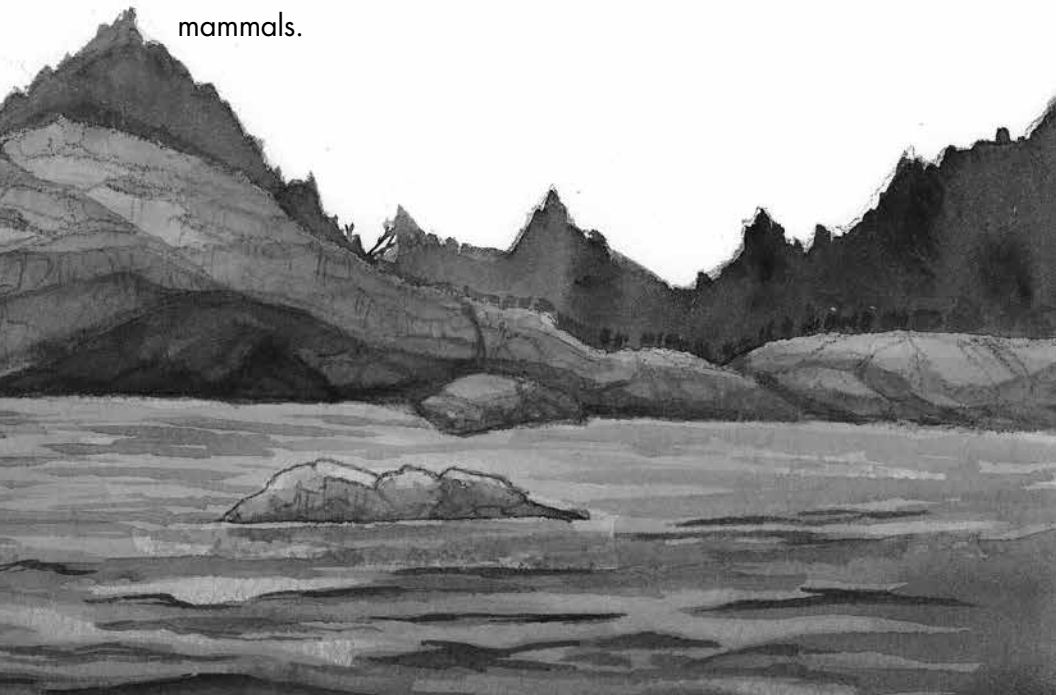
schools. They are called forage fish because they provide food for larger fish, such as salmon and halibut; seabirds, such as murre and puffins; and marine mammals, including seals, porpoises, and whales—and humans too. Because they are food for so many other creatures, their survival strategy is to lay epic quantities of eggs.

Eelgrass meadows grow in estuaries where fresh and salt water mix. Their roots help stabilize sandy and muddy bottoms. They provide food for birds, a nesting place for the eggs of many small feeder fish, and a home to crabs, sea stars, clams, snails, anemones, and sea urchins. And they provide a safe place with plenty of food for young salmon to transition from their freshwater birthplaces to the ocean. Eelgrass can help reduce the acidification of the ocean, and like rainforests, it absorbs carbon dioxide to combat global warming.



CONTINENTAL SHELF

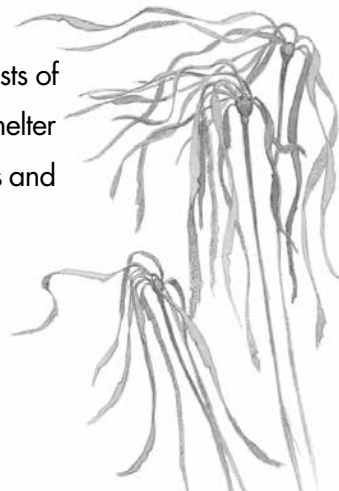
The **Olympic Coast National Marine Sanctuary** encompasses the mouth of the Salish Sea and extends about 100 miles along an undeveloped stretch of Washington shore. It reaches westward 25 to 50 miles, to the edge of the continental shelf, and contains 600 small islands, emergent rocks, and arches. These tiny refuges provide resting spots for seals, sea lions, and millions of birds. The North Pacific is colder and less salty than the North Atlantic. It is well known for rough seas and big waves. The continental slope is very steep here. Wind and ocean currents bring upwellings of nutrient-rich cold water from the deep. This upwelling feeds plankton, which become food for an abundance of fish, birds, and marine mammals.



Mussels are a type of shellfish that cling to the rocky shorelines. They live in the intertidal zone, so when the tide is ebbing they close their shells tightly to keep from drying out and to protect themselves from predators like otters, sea stars, raccoons, and humans. Like clams and barnacles, they are filter feeders, drawing water into their bodies and filtering out plankton to eat. A mussel can filter a bathtub full of water every day, which means that they play a key role in keeping our seas and oceans clean. But it also means that pollutants in the water can accumulate in the mussels, sending those poisons up the food web.



Bull kelp is one of the fastest-growing plants in the ocean. It starts as a tiny spore and can grow as much as 10 inches a day, reaching a height of 30 to 60 feet by midsummer. A holdfast anchors it to the bottom, and a bulb at the top of the thick and flexible stem floats on the surface. Many long, flat blades attach to the bulb. Forests of bull kelp and giant kelp provide important shelter for fish, crabs, sea stars, and sea urchins. Seals and sea otters also like to hide in kelp beds.

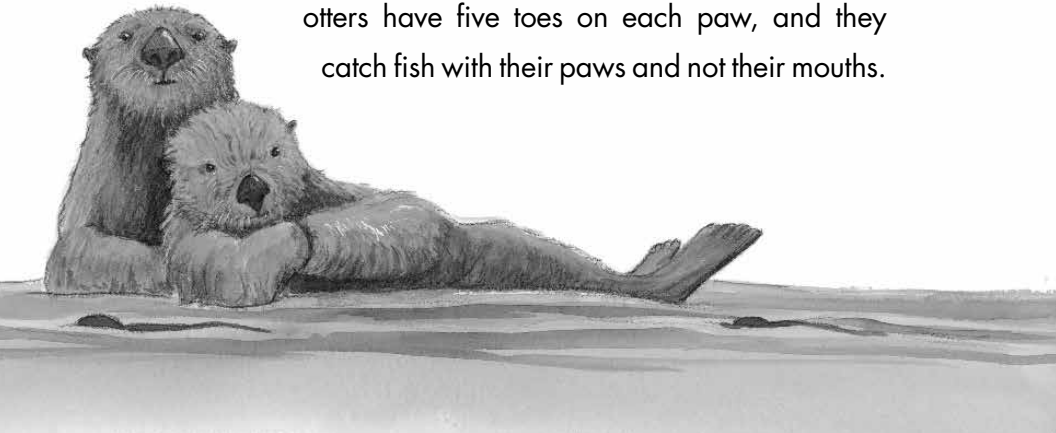




Gulls are one of the most numerous birds of both the Pacific and Atlantic coasts. They often nest in large and noisy colonies. Gulls are opportunistic feeders—they have a hugely varied diet that they gather both at sea and onshore. It includes small fish, mollusks, crustaceans, insects, eggs, and even smaller birds. They are also well-known consumers of dropped French fries and other human-generated garbage.

Sea otters can spend their entire lives in the ocean, and yet their skin never gets wet, because they have the most dense fur of any animal on earth—about a million hairs per square inch of skin. The air trapped in their fur keeps otters warm and buoyant. They are also one of the very few animals to use tools. Much of their food—sea urchins, crabs, clams, mussels, abalone, and snails—has a shell, so they use rocks to break shellfish free and then use a rock again to break open the shells to eat the meat inside.

Like all the other members of the weasel family, sea otters have five toes on each paw, and they catch fish with their paws and not their mouths.

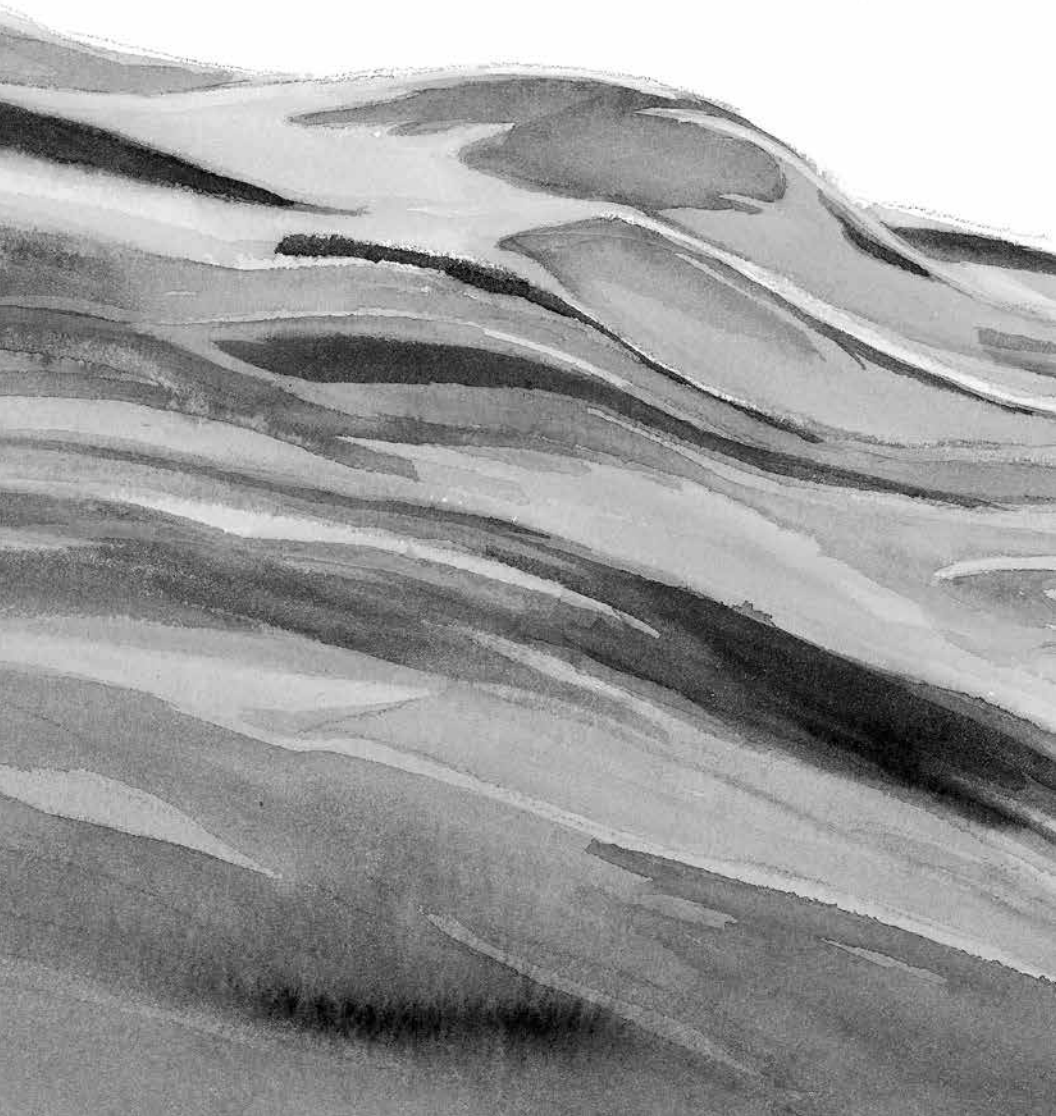


Harbor seals, like sea otters, were once hunted to near-extinction. But the Marine Mammal Protection Act passed in 1972 has helped them recover to a stable population. Harbor seals spend about half of their time on land—resting, birthing pups, and molting. Though most of their hunting for food only requires short and shallow dives, harbor seals can go as deep as 1500 feet and stay down for 30 minutes. In a deep dive, a seal slows its heart down to only a few beats per minute, which helps conserve oxygen. It then uses the oxygen stored in its muscles.

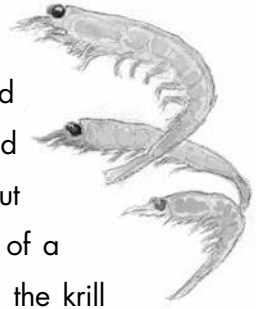


OPEN OCEAN

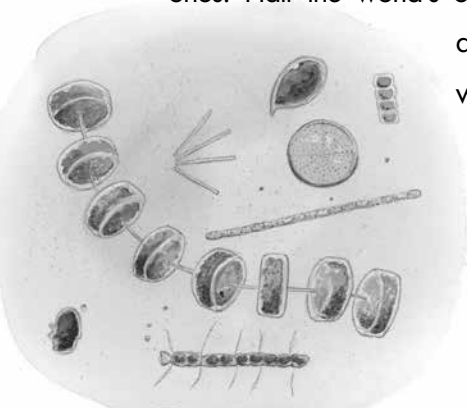
The **open ocean** is also called the **pelagic zone**. It is the area beyond the coast and the continental shelf, where the water becomes much deeper and the number and variety of living creatures decreases dramatically.



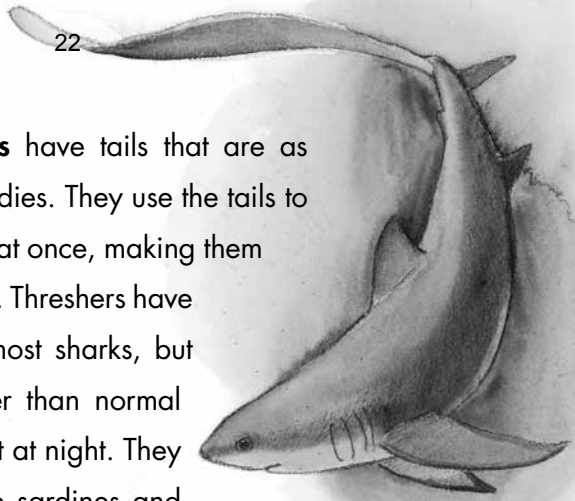
Krill are not much to look at—pink, opaque, and the size and weight of a paper clip, they spend their lives in a swarm, eating phytoplankton. But if you put all the krill in the world on one end of a balance scale and all the humans on the other, the krill would weigh more. There are 85 different species, and most are bioluminescent, meaning that they glow in the dark. Krill are a vital source of food for whales, penguins, seabirds, fish, and seals. Like eelgrass, they play a huge role in taking carbon out of the atmosphere and depositing it on the ocean floor, making them tiny heroes in the fight against global warming.



Phytoplankton are microscopic plants and **zooplankton** are microscopic animals. All together, **plankton** are the most numerous creatures in the world. They are the basis of the food chain of every ocean, feeding the smallest animals, which in turn feed larger ones. Half the world's oxygen comes from photosynthesis done by phytoplankton. Much of the world's oil and natural gas is made up of decayed plankton remains.



Bigeye thresher sharks have tails that are as long as their whole bodies. They use the tails to stun fish, often several at once, making them easier to catch and eat. Threshers have smaller mouths than most sharks, but they have much larger than normal eyes, to help them hunt at night. They eat fish, little ones like sardines and others as big as a tuna. They also eat squid. Though we only know a little bit about the offshore community of orcas in the North Pacific, we do know they eat sharks and squid.



Laysan albatrosses nest on islands in the Pacific, especially the Hawaiian Islands, and they travel all over the north Pacific, sometimes flying more than 300 miles in a day. Their wingspan of almost seven feet makes it possible for them to soar for hours without flapping their wings. In calm weather they float on the surface of the ocean to



catch fish and squid, but when the winds are strong, they can snap up a meal in flight. They are one of only a few animals who can drink salt water without getting dehydrated. Albatrosses live unusually long lives. They are not fully grown until they are 8 or 9 years old and they can live to be 65.

Blue whales are the largest animals in the world; a blue whale's tongue weighs as much as an elephant and its heart is the size of a car. And yet they survive on one of the smallest animals—krill. Blue whales swim, alone or in pairs, in every ocean except for the Arctic. They can live as long as 90 years. They are also the loudest creature on earth—in good conditions blue whales can hear one another from 1,000 miles away.



DANGERS IN THE SALISH SEA

Although no animals hunt and eat orcas, there are many threats to orcas' survival. From 1964 to 1976, more than 200 orcas in the Salish Sea were put through the stress of capture, some of them more than once. This led to the deaths of at least a dozen whales. More than 50 others were sold to marine entertainment parks around the world. Those captured would have been the matriarchs of today. The loss of their knowledge and the babies they would have mothered has made the lives of the current community extremely challenging.

Another stress on the orcas is pollution. Runoff from roads, cities, industries, mines, and farms—as well as fuel leakage from boats—all send toxins into the water. The toxins are absorbed into the plants and planktons of the sea and work their way up the food chain so that the apex predators—orcas, seals, sea lions, and eagles—carry the heaviest toxic load. Ordinarily orcas' bodies absorb a toxin and store it in their blubber, where it causes them little harm. But when food is scarce and the orcas start to live off the energy reserve in their blubber, the toxins

enter their bloodstream and make them sick. The toxins, combined with a dramatic decrease in the number of salmon returning to the Salish Sea, are part of the reason so many orca calves are stillborn or die in the first few months of life. Abandoned fishing gear and plastic garbage also threaten animals in all the world's oceans.

Noise is a kind of pollution, too. Because orcas rely on echolocation, the noise from ship traffic makes it harder for them to hunt and may cause them to travel farther and forage less. Fortunately, there are solutions to ship noise. Slowing down in the presence of whales and orcas and keeping distance from them reduces the pressure of noise pollution. Efforts are underway to convert some ferries to electricity, which will reduce both their noise and their carbon footprint.

The world's oceans are on the front lines of the war against global warming. Warmer water holds less oxygen. Even a small increase in temperature affects the whole food chain. For orcas, salmon are the key component of the food chain. The biggest problem orcas face, by far, is the lack of salmon. Salmon runs are down 60–90 percent in recent years. And salmon today are half the size they once were, but they still take the same amount of energy to hunt.

HOW CAN I HELP THE ORCAS?

In order to thrive, orcas require clean, cold, quiet water and a healthy food chain. Though the SRKW are under threat from many sources, there is much that can be done to help them. It is already illegal to hunt or capture orcas or any other marine mammal in US waters. The Marine Mammal Protection Act was passed in 1972 with the help of schoolchildren who wrote their members of Congress to demand action. Any person can raise their voice to ask for change. Any person can change their behavior to make the world better. Here are some things you can do to help protect the Salish Sea and every river and sea in the entire world:

- 1.** Use less energy. Global warming is rooted in the burning of fossil fuels. Try to use less fuel by walking, biking, or skating instead of riding in a car. Wear something warm instead of turning up the heat. Turn off lights and electronics when you are not using them.
- 2.** Use less stuff, and recycle. Plastic is dangerous in the oceans. It entangles and chokes sea life, and it eventually breaks down into tiny bits that are swallowed. Reuse

plastic items like water bottles and bags or use alternatives.

3. Learn about your local ecosystem. You'll be most effective when you advocate close to home, and there is plenty to do in your own backyard.

4. Raise your voice. Write letters to local news channels and to your representatives in Congress. You have a right to speak to people in power and to protest when their actions are dangerous. The creatures and plants of the Earth need your voice.

5. Respect your local indigenous community and learn from their environmental research and teachings. Many of America's strongest environmental initiatives have been rooted in and led by indigenous communities.

6. Believe that the problems of global warming and pollution can be solved. When I was a child, I never saw an eagle. Not once. But we learned that the pesticide DDT was poisoning the raptors of the world (and also insects, fish, amphibians, other birds, and people) and so we stopped using DDT. Slowly the food chain got healthier, and now I see eagles all the time—and hawks and osprey and falcons, too.

Author's Note

As I write this story, the Southern Resident Killer Whales who inspired it are under threat like never before. Their numbers have dropped to one of the lowest points in recorded history. Pollution and ship noise and the lack of salmon have pushed these beautiful animals to the brink. Even more concerning, the very forces of climate change and pollution that hurt orcas are just as dangerous to humans. But I also know that the darkest and most difficult times in our history have been the times when people have been their bravest and their most innovative.

Every problem facing our orcas in the Salish Sea has a solution. Some are already being put in place. Older ferries are being replaced by cleaner, quieter electric ferries. The Elwha was once a dead river, but dams have been removed and salmon are now spawning in that river again. New rules have forced boats to go slowly when whales are present, so that they don't make as much noise. The Lummi Nation has used its treaty-protected fishing rights to prevent the largest coal terminal in North



America from being placed in the Salish Sea.

Our oceans are on the front line of the war against global warming. Restoring our planet and reversing climate change will be the fight of our lives. I am inspired every day by the activism of my young readers. I'm confident that together we can heal our world and all its waters.

Artist's Note

When I try to describe something clearly in a drawing, I always notice new details. Drawing carefully allows me to learn more about an organism, and I learned so much about the Salish Sea ecosystem while illustrating this story. I would encourage young artists, scientists, and others with a genuine curiosity for the world to keep a pencil and sketchbook on their journeys (down the road or across the globe). Drawing is a way to teach yourself, through observation, more about the world around you.



Resources for Young Readers



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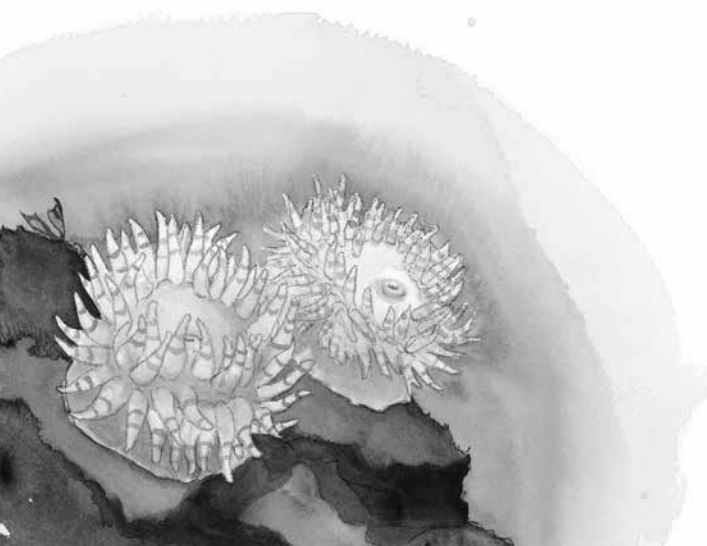
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General Resources



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Safina, Carl. *Beyond Words: What Animals Think and Feel*. New York: Henry Holt and Co/Picador, 2015.

Thompson, Jerry. *Cascadia's Fault: The Coming Earthquake and Tsunami That Could Devastate North America*. Berkeley, CA: Counterpoint Press, 2011.

The Center for Whale Research tracks orcas in the Salish Sea and posts pictures of the encounters on its website.
<https://www.whaleresearch.com>

The SeaDoc Society has a short video series called Salish Sea Wild; perfect for use in the classroom.
<https://www.seadocsociety.org/salish-sea-wild>

The NOAA Fisheries website contains a wealth of information about the habitats and species of the ocean, including a series on how orcas use echolocation to hunt.
<https://www.fisheries.noaa.gov>

The Discovery of Sound in the Sea website has a fascinating audio gallery of maritime sounds.
<https://dosits.org/galleries/audio-gallery/audio-gallery-summary/>

