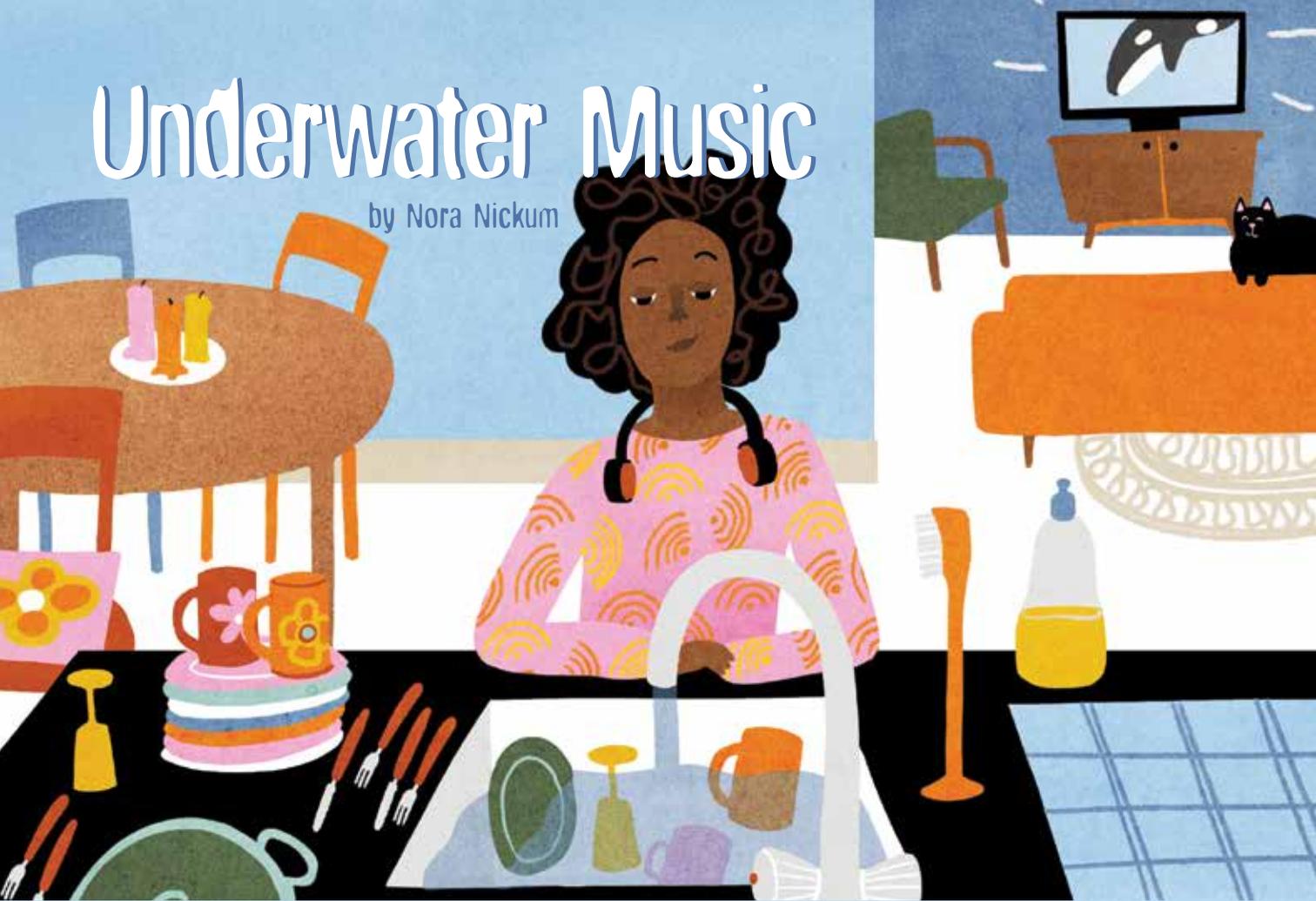


Underwater Music

by Nora Nickum



“**THE MOTHER ORCA**, Tahlequah, has been carrying her dead calf for days over hundreds of miles of ocean,” said the reporter. Zara tried to tune the TV out, running the faucet and humming a song she was working on.

The nightly news, it seemed, was never good news. Zara generally avoided it entirely. But when it was her night to do the dishes, she couldn't help but hear the television blasting from the living room.

“Tahlequah just does not want to let her little one go,” the reporter continued. “She lifts her calf up out of the water, as if she wants to help it breathe.”

I give in, Zara thought, drying her hands. The dishes can wait.

In the doorway, she collided with her brother Ethan, who was most likely in search of ice cream.

“Hey, watch out,” he said, bumping her again, harder.

Zara ignored him and plopped onto the sofa.

The reporter said that the mother orca seemed to be grieving for her newborn. She interviewed scientists, who explained that the pollution in Puget Sound made it hard for the orcas to give birth to healthy calves. Tahlequah's four-hundred-pound baby had died less than half an hour after being born.

Illustrated by Agnes Loonstra

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PLAYING UNDERWATER BRINGS ME
A WHOLE NEW AUDIENCE.



BREACHING IS WHEN A WHALE
LEAPS PART WAY OUT OF THE
WATER.



WDDDD! NICE LEAP, TATER!
HYDROPHONES ARE UNDERWATER
MICROPHONES.



Zara watched the footage of orcas swimming, surfacing to breathe, breaching into the air. They were so graceful, so majestic, so *wild*. And they swam close together, as if they actually enjoyed being near family. Zara liked her parents and Ethan just fine—most of the time—but family trips were not exactly easy. This summer, when they drove from their home in eastern Washington to Oregon for vacation, she and Ethan had fought the whole way about what kind of music they would listen to, and then could not agree on what would be fun to do once they got there. The orcas looked like they knew how to get everyone going in the same direction.

When the news segment ended, Zara headed back to the kitchen.

“What can we do to help the whales, Mom?” she called, dunking a pan in the sudsy water. “I don’t exactly have a bunch of money I can donate.”

“Why do you care so much?” Ethan interrupted. “You’ve never even seen one in real life. I thought you only cared about your tunes.”

“I don’t think there’s much we can do, Z,” said Mom. “We don’t live by the ocean, where there might be a beach cleanup or something.”

Zara went to do her homework, but she could not concentrate on her lab report. Science was not her favorite subject anyway. Someday she was going to have a career in music. She turned up the volume on her favorite playlist and started searching for information about orcas online. Maybe she could find a way to help them.

She read that orcas, often called killer whales, were actually members of the dolphin

family. The southern resident orcas—which swam in the coastal waters of the Pacific Northwest, including Puget Sound near Seattle—were endangered. There were only about seventy-five left, and they lived in three family groups, called pods. The orcas fed largely on the salmon that spawned in inland rivers, but with human population growth and pollution, fish stocks were greatly reduced. Scientists had studied the southern resident orcas for years and given each one a name. Zara learned that Tahlequah had had one other baby, named Nettle, who was now eight years old.

It was true that Zara had never seen an orca, but she was starting to feel like she knew them. Of course, she would never say that to Ethan.

THE NEXT NIGHT, Zara found a link to a website that had live sounds and recordings captured by four underwater hydrophones in Puget Sound. She listened to recordings of the three orca pods calling underwater. Maybe there was a way her ear for music could come in handy. She replayed the recordings, over and over, until she could hear a difference. One pod’s calls sounded like kittens meowing. Another like whistles. The call of Tahlequah’s pod sounded like a squeaky door.

She paused the recordings and turned on the live stream. There were no orcas around the hydrophones tonight, just the sound of lapping water and the low drone of ships.

“It sounds like one of those fake waterfall sound apps,” said Ethan, poking his head in. “Only worse.”



“Or better, because it’s real,” Zara countered.

People all over the country were logging in to listen to the live stream and then noting what they heard. These volunteers, called community scientists, helped researchers learn more about orca behavior by keeping track of where the orcas were and monitoring any noise pollution from boats that might disturb them or their pod calls.

Zara signed up to be a community scientist. She listened to the recordings on her headphones all week on the way to school but did not hear any orca sounds. At least the background noise drowned out Ethan’s teasing.

Over the weekend, Zara made herself check the news. Tahlequah had finally let her calf go, after seventeen days. Zara’s eyes stung. She turned off the live hydrophone feed and went to bed.

BUT THE TROUBLING orca news was not over. A few weeks later, another story was on all the local channels.

“Nettle, Tahlequah’s surviving calf, appears to be sick,” the newscaster reported. “Concerned scientists went out on a boat and used a long pole to reach Nettle’s blowhole and take a sample of his breath. Now they hope to figure out what’s wrong and treat Nettle with antibiotics.”

But Tahlequah’s pod had not been seen since the scientists took the sample. The orcas had gone back out to the open ocean, and nobody could predict when they would return.

“Time is running out,” a scientist said. “We need to find Nettle. This endangered population can’t afford to lose another orca.”

And Tahlequah can’t lose her other baby,
Zara worried.

Scientists in helicopters and boats looked for Nettle during the day, but they would not have a chance of spotting him at night.

Zara had an idea. *We can use sound to find him!* She calculated the time that the hydrophone network was least likely to have coverage, when most of the country would be asleep. She set her alarm for midnight and listened carefully for a couple of hours, doing jumping jacks when necessary to keep herself awake. But she did not hear any orca calls.

She listened again the next night, and the night after that. She refreshed the news pages, but there were no updates on Nettle’s location.

At school, her biology teacher scolded her for not paying attention in class. “I’m worried about the orcas,” Zara tried to explain.

“Well, if we can produce healthy salmon here upriver, that’ll help,” said Ms. O’Leary. “Sign up for a tree-planting day sometime, and make sure your parents fix any leaks on your car to keep oil and chemicals from running into the streams where the salmon spawn. We may be hundreds of miles from the ocean, but here’s where the salmon come to have their babies.”

But Nettle needs help right now, Zara thought. *Those long-term fixes won’t do it.*

Zara was too tired to stay up that night. She told Ethan she would give him all her dessert for a week if he would listen to the hydrophone after midnight and wake her up if he heard something.

“Two weeks of dessert,” he said.

“Fine,” she said.

She was sound asleep when Ethan shook her awake.



I HEAR SOMETHING STRANGE
ON THE HYDROPHONE...



...OOO—IS IT ORCAS?



SOUNDS MORE LIKE A PYGMY
SHREW PLAYING THE CELLO!

“I hear something,” he said.

Zara rushed to the computer.

“That’s obviously just a boat!” she wailed.

Ethan snickered.

An hour later, he shook her awake again.

“Not funny,” Zara said, covering her head with a pillow.

“No, really, I don’t think this is a boat,” he said.

They listened together. There were the usual crashing waves—and then a noise like a squeaky door. Zara’s sleepy eyes got wide. “That’s Tahlequah and Nettle’s pod!”

They found a number on the hydrophone network website and called a researcher in Seattle.

The researcher logged into the hydrophone live stream and suddenly sounded much more awake. “Wow, nice work!” she

said. “Now that we know where Nettle is, the team can get out there to help him.”

ZARA GAVE UP on sleep. When the morning news came on, she watched footage of people on a boat trying to get medicine to Nettle with a dart gun. They missed twice, but finally they hit him. Zara cheered. Ethan gave her a fist bump.

Zara was trying to explain to her parents why she could not possibly go to school that day, when the phone rang. It was the news station, calling to request an interview.

“We’re taping at a spot where the whales can sometimes be seen from shore,” the production assistant said. “We’d like to highlight your work as a real community scientist.”

Zara’s parents conferred.

“If they’re paying, we’ll go,” they said.



Mom and Zara were on a small plane before lunchtime, heading over the mountains toward the sea.

THE PRODUCTION TEAM was waiting at a waterfront park with cameras and microphones. After interviewing the team that administered Nettle's treatment, they asked Zara how she had helped find him.

"I learned to tell the pods' calls apart," she said. "It was like underwater music. I'm thinking maybe someday I'll be a scientist who studies those kinds of sounds."

"And what will you do this winter, when the orcas are out at sea? You won't be able to listen to them for a while."

"Well," said Zara, "I was thinking about starting a campaign to get everyone to fix their car leaks. Then there will be healthier salmon for the orcas to eat when they come back. I'll ask some local bands to promote the campaign at their concerts."

The interview ended, and one of the scientists waved. "We just heard a report that the orcas are heading this way!"

They heard the *whoosh* of air from the orca blowholes before they saw them. One of the scientists lent Zara her binoculars. Zara watched the dorsal fins gliding up and then back under.

"Is that . . . ?"

"There at the back, that's Nettle," said the scientist. "And his mother, Tahlequah. They're lagging a little behind, but they should be OK now that he got his treatment."

Mom and Zara flew home that evening. Zara slept the whole way.



As she walked in the door, Ethan handed her a spoon and a bowl. "You still owe me two weeks of dessert," he said, and smiled. "But that can start tomorrow." 🐜

Author's Note Tahlequah really did carry her dead calf for seventeen days and for more than 1,000 miles off the coast of the Pacific Northwest in the summer of 2018. Her heartbreaking story was broadcast around the world, bringing increased attention to the plight of the endangered orcas.

Nettle is fictional. But scientists are in fact currently discussing whether they should try to intervene to treat sick orcas, and if so, how. They attempted to do so for the first time in 2018 with an orca named Scarlet, but they were unsuccessful.

Meanwhile, conservation groups are trying to help the orca population recover by increasing salmon stocks, reducing water pollution, and slowing boat traffic to quiet the waters and not disturb the orcas, who use echolocation—sound waves—to find fish to eat.

You can visit the website orcasound.net to listen to underwater sounds—including orca calls—captured by hydrophones in Washington State. See if you can tell apart the calls of the different pods, like Zara learned to do!

