

are all such good friendship skills that we're learning right now by sharing this fun time with one another."

During activity time, kids work on a project using supplies most families have at home. One week they made dinosaur masks, then sang a dinosaur song and danced, stomped around and roared into the screen as dinosaurs.

"My favorite part of the Play to Learn program is how much Amelia learns from their craft projects every week," said Meghan Callaway of Lakebay. "Her favorite thing so far has been the pajama parties. She loves to sing the brush your teeth song nightly now."

Although the virtual program has its success stories, Play to Learn is not reaching nearly as many families as it used to.

"We're reaching out virtually but for those folks who don't have access to the internet, they don't necessarily know," Program Director Charleen Balansay said. "The environment as much as the people in a child's life builds and nurtures their whole being, so that's the tough part. That's the hardest part. That really strong sense of your neighborhood community and those connections that you make, those friends that you make in those natural ways is what I miss."

"I miss hand stamps and the whole, full richness of the tactile. I even miss carrying boxes and the outlet of the physical activity to keep my bones from turning to dust," Jones said. "We all go through a lot of feelings in our day about what's going on in the world."

In a tone reminiscent of Mister Rogers, she added, "Know that whatever you're feeling right now, it won't be a forever feeling. And I like you just the way you are."

For more information, go to <https://play-tacoma.org/play-to-learn>. ■

Vaughn Man Killed by Falling Tree Limb

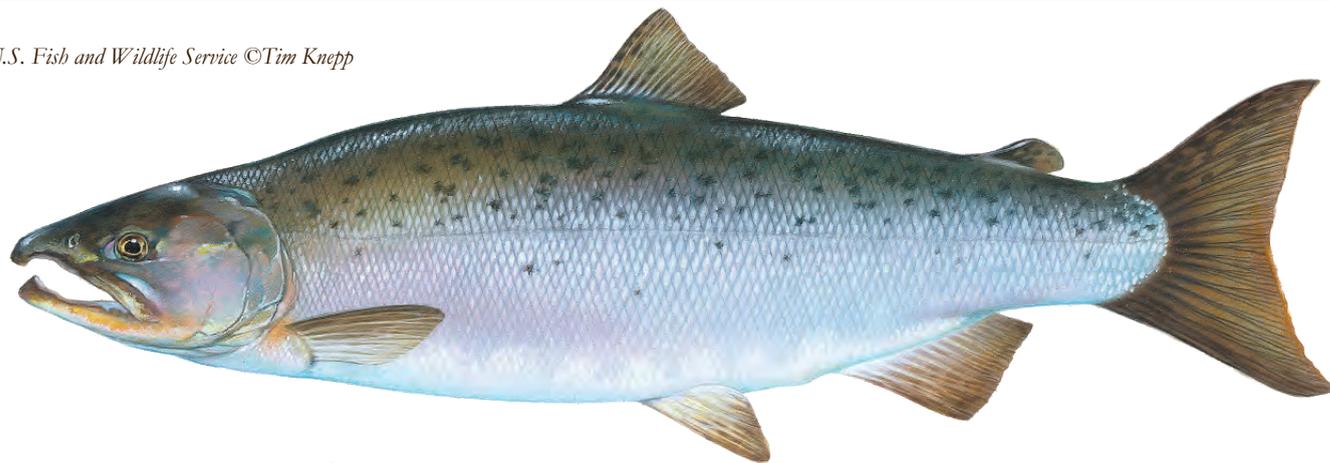
STAFF REPORT

Dale McCracken of the north Vaughn area was killed instantly by a falling tree limb during a wind storm the afternoon of Oct. 13. He was 30 years old.

According to Key Peninsula Fire Department, McCracken was clearing debris from his driveway at about 4 p.m., when he was struck in the head by a 7-foot branch, about 6 inches in diameter, fallen approximately 50 feet. He was found by his girlfriend.

McCracken's friends have organized a GoFundMe and a donation account at Sound Credit Union to help defray funeral expenses. ■

U.S. Fish and Wildlife Service ©Tim Knepp



When the Silver Salmon Return

CHRIS RURIK, KP NEWS

Last month the silver salmon came to Glen Cove. Each year their arrival roughly coincides with the first great rainfalls of autumn, when the Pacific Ocean reminds us of its presence by sending us waves of wind and fog and darkness — and salmon.

Their energy matches that of the atmosphere. While leaves are torn from limbs and streams gouge their channels anew, carrying into the Sound rich accumulations of humus, salts and acids, bands of silver salmon gather near creek mouths to leap and splash before they spawn. It is a maelstrom of chemistry.

A fishing buddy and I paddled into the thick of them one morning. I think they are the most beautiful salmon, perfectly proportioned. There below a high bank crowned with madronas, the water green with algae and the reflections of trees, the fish flashed the silver of the open ocean, the silver of fog on ridges, and our metal canoe.

Though we cast for hours and often hit right where they had jumped, they struck neither flies nor lures. Other things occupied them, incredible transformations. Soon their backs would turn green and their bodies the red of vine maple leaves. They would leave saltwater for the last time to swim up Minter Creek, perhaps making it under the new State Route 302 bridge — rebuilt for their sake — to find gravel beds where they could lay their eggs and die.

It is hard to find a comparison for the extreme difference, to a salmon, between salt water and fresh. Maybe if you could step from Antarctica directly into the Sahara Desert you would get a similar total shock, but it wouldn't go much more than skin deep. For salmon the shock rattles every cell in their bodies.

Salt's constituent ions must be kept in fine balance in any animal's bloodstream for cells to maintain the correct pressure to operate. It's a narrow range. Last winter one of my close relatives nearly went into a coma because her sodium dropped by 20% — a minor fluctuation in most of life's

parameters, but this meant her husband found her unconscious in bed with her brain so swollen she cannot remember her days recovering in the hospital.

A salmon in salt water is surrounded by a fluid that has six times the salt concentration of its body tissues. We face nothing similar on land. Ions in fluids want to be in equilibrium, so diffusion constantly tries to force the water's salt through the salmon's gills and into its blood. As its blood is loaded with salt, its kidneys produce more urine, dehydrating it.

In fresh water the situation is no easier. The fluid surrounding the salmon essentially lacks salt, reversing the gradient. The water that enters the salmon's body acts to dilute its tissue concentrations of salt ions, causing its cells to swell, and the urine it produces to carry away excess water will inevitably have much-needed salt ions in it as well.

It is a Catch-22 in both environments. A salmon fights it by drinking constantly, several liters per day, in salt water, and not at all in fresh water. In salt water their kidneys produce highly concentrated urine while in fresh water they continuously discharge urine that is practically water.

An adaptation in their gills is even more incredible. Gills are essentially sheets of blood vessels exposed to the world at all times — the perfect sieve, in theory, through which salt ions should flood into or out of a salmon. Yet cells in salmon gills have special enzymes that actively carry salt ions against the gradient, holding the flux at bay like a bilge pump in a boat with holes. When a salmon moves from salt water to fresh water, these "pumps" reverse direction.

Salt is just one of many facets of water chemistry, and these changes are just part of a salmon's transformation as it prepares to cross the boundary. So significant are its body's changes that some scientists refer to them as a type of metamorphosis — as significant as that of an insect.

And so the silvers that were too busy metamorphosing to bother with my hooks have by now entered the world of fresh

water. The eggs they are laying will hatch in spring, and the young will know nothing of salt water for many moons. Most salmonids go to sea within months of hatching, whereas silvers stay in fresh water for at least a year. The young silvers will move with periodic storms, find pools to stake out tiny territories, calibrate themselves to the chemistry of the water around them — lucky to be in a relatively rural watershed — before the instinct to migrate finally takes them into the brackish water at the mouth of Minter Creek, where their first transformation will prepare them for life in the open ocean.

And in another year or three, with the storms they'll be back. ■

In 2001, 21 Northwest tribes joined the federal government in a lawsuit against Washington state to remove roadway culverts blocking salmon habitat, arguing that the state had a treaty obligation to preserve fish runs. The court agreed with the tribes and ruled in 2007 that the state was in violation of its obligations under the Stevens Treaties. These were a series of agreements made in 1854 and '55 where tribes gave up land in exchange for, among others, "the right of taking fish, at all usual and accustomed grounds and stations," a right which was reaffirmed in the historic 1974 Boldt decision.

In 2013, a U.S. District Court issued an injunction ordering the state to remove offending culverts by 2030. In 2016 the Ninth Circuit upheld the district court's decision and in 2018 the U.S. Supreme Court affirmed it.

Two culverts and a bridge identified as fish barriers on Minter Creek on SR-302 near 118th Avenue NW are being replaced as part of the state's effort to comply with the court order. The project will open 25 miles of upstream salmon habitat when completed in 2021. There are approximately 1,000 other similar barriers in the state to replace at an \$3 billion.