

The Four-Footed Watercraft Inspector

Can specially trained dogs keep invasive mussels out of western waterways?

The wording of this article has been adjusted to a 7-8th grade reading level. Andrea Barbknecht of the Wyoming Wildlife Federation made the revisions as part of the organization's curricula to engage kids in exploring their Wyoming landscape.

The original article, written by Maria Anderson for Western Confluence magazine, can be found [here](#).

By Maria Anderson (May 2020)

A mile outside Browning, Montana, a watercraft inspector sits on the side of the highway next to her kennel. She's waiting for boaters heading to and from Glacier National Park. The boaters pull to the side of the road for a **mandatory** invasive species check. Meet Lily, a 55 pound, 11-year-old golden Labrador retriever with a white face. She wears red booties on her front feet and a red vest. Today Lily and Aimee Hurt, her trainer, are here to support two Blackfoot Fish and Wildlife rangers, Lia Rattler and Leander Butterfly. Together, the team are searching for signs of zebra and quagga mussels. The mussels are invasive species that threaten Montana's beloved rivers, lakes, and streams. Lily is speeding up the searches. She is also helping spread the word about how critical these inspections are to protect the West's waters from invasive species.

These mussels are about the size of pistachio nuts, but they reproduce quickly. They stick themselves to underwater surfaces with a byssus, a clump of filaments they secrete. The mussels have already caused huge ecosystem-wide shifts in Lakes Michigan and Huron. They have changed two of the world's biggest lakes. There are trillions of the mussels in the Great Lakes. The mussels have been moving west on people's boats over the past few decades. They pose a massive threat to Montana's **aquatic ecosystems** and struggling native fish **populations**. Montana's threatened species include Arctic grayling, bull trout, and westslope cutthroat. The mussels eat all of the microscopic food in a water system. This leaves little for other wildlife, including **native** fish. They also form layers of shells on things like water pipes and ruin beaches. Imagine cutting your feet on decaying mussel shells any time you tried to walk barefoot along your favorite lake.

Mussels spread quickly in part because they produce up to one million eggs per year. Fertilized eggs develop into microscopic larvae, called veligers, within a few days. These near-invisible larvae can survive for weeks in a river and travel hundreds of miles. They love lakes and slow rivers and they can live in boat motors or storage tanks where people can't reach. This is where the dogs come in. Unlike humans, they are very good at detecting larval mussels with their noses. Humans must use sight and touch to search boats. They feel for the sandpaper texture of the larvae just beginning to grow their hard shells. Dogs are able to smell the veligers in the water where they are completely invisible to humans.

"For dogs like Lily," says Hurt, "this is the most fun thing she could do."

At this point, Montana is not infested. Water sample tests show that the mussels are making their way west. Officials have not yet found any populations of adult mussels. In 2016, Montana Fish, Wildlife, and Parks found traces of larvae in water samples from the Tiber Reservoir, near Shelby. There have been inconclusive results on the Canyon Ferry Reservoir, the Milk River, and the Missouri River. In mid-June of 2019, North Dakota had its first mussel **contamination**. An angler spotted them in Lake Ashtabula. Wyoming, Washington, Oregon, New Mexico, and Idaho are the only states in the West which have no known mussel detections. These states also have monitoring programs that would let them know if they did have mussels.

In Montana, these creatures could cost the state \$234 million every year by decreasing water quality, reducing recreation, clogging irrigation equipment, reducing property value, and damaging infrastructure. The number is from a 2019 report by the Montana Invasive Species Council.



Lily and her trainer, Aimee Hurt, check a boat for signs of mussels outside Browning, Montana. (Photo by Maria Anderson.)

Lily and Hurt are at the check station through Working Dogs for Conservation (WD4C). They are part of the effort to keep mussels out of Montana as long as possible. Hurt has a biology degree from the University of Montana. She is a co-founder of WD4C in Bozeman. The organization adopts high-energy shelter dogs that are hard to find a home for and trains them to protect wildlife and ecosystems around the world. WD4C has 12 mussel sniffing dogs on staff. They have trained 35 dogs total who

work in 16 countries across 5 continents. They have partnered with dozens of conservation groups. They help these groups protect ecosystems from invasive species by catching invaders early. The dogs have been trained to detect brook trout, yellow star thistle, rosy wolf snails, and brown tree snakes as well as mussels. The dogs are especially good at finding the first individuals of an invasive species. That way managers have a chance to stop them before they create a population.

“I see dogs as a way for us to buy more time before mussels hit Montana,” Hurt says, “while researchers come up with more tools to deal with the invasion.”

WD4C looks for dogs hurt calls “needle-in-a-haystack dogs.” She tosses a ball down the aisle of a shelter and looks for dogs that track it down. They go through about a thousand dogs to find one who can do this kind of work. A good working dog like Lily has too much energy for a regular household. “I’ve learned that if there’s some point during a dog’s initial stay where I think ‘This is a huge mistake’, then I know the dog is a good fit,” says Hurt. She found Lily through a private shelter near Atlanta. Lily was on her fifth home before she came to live with Hurt and three other dogs in Missoula.

Hurt describes their first training exercise together as a disaster. “I was tangled up and she was barking and frothing and confused.” But Lily soon improved. In one training exercise, Hurt hid a scent inside cinder blocks. When Lily sniffed the scent, Hurt would throw a ball for her. Lily quickly realized that finding the scent and sitting

was all she needed to do to earn play time. Many experienced dogs like Lily can learn a new scent in a few hours. Wicket, a retired dog, knows 32 scents, from Hawaiian wolf snails to Chinese moon bear scat. He has travelled more than 100,000 miles in 12 years of field work.

Lily knows 19 scents so far, including white-footed vole, grizzly scat, and lespedeza, a flowering plant also known as bush clover. She can even tell the difference between native and invasive lespedeza. This summer she worked near Flathead Lake, in Bighorn Canyon, at Yellowstone Lake, and at Lake Roosevelt.

Hurt considers dogs supplementary to human searchers. “Dogs are good at the prevention piece of conservation.” They can detect hard-to-spot organisms at low densities. “They’re also great for quickly confirming human finds,” she says.

In the past year, Montana Fish, Wildlife, and Parks inspectors checked over 50,000 watercraft and found 12 boats with traces of mussels. This morning, two men pull up in a truck pulling a large motorboat.

“Mind if Lily checks your boat?” asks Hurt. She wears boots and a bright yellow vest. She has dog toys in her pockets that Lily keeps trying to grab.

“Oh, you got dogs doing this?” one man asks. “That’s really neat.”

“OK, sweet pea,” says Hurt. Lily approaches the boat, wriggling with excitement.

“Show me,” says Hurt. Lily shuffles, squeaking, tail wagging. She trots back and forth, going where Hurt points.



Lily carefully checks each vehicle and watercraft, sniffing for both adult mussels and their microscopic larvae called veligers. (Photo by Maria Anderson.)

“Come check right here,” Hurt says.

Lily puts her nose on the bumper. She leaves a wet mark in the dust. She walks all the way around the boat. Hurt takes extra care to show Lily the drainage holes at the back of the boat. Lily jumps and places her booties on the boat to balance while she sniffs. Nothing. The rubber ball on a rope stays in Hurt’s pocket.

The **inspection** is over in less than five minutes. Hurt hands the boaters a card with Lily’s picture and information about WD4C and mussels. Public education is an important part of Lily and Hurt’s job. WD4C trained Alberta Environment and Parks’ Conservation K9 teams in mussel prevention. They did more than \$1 million worth of outreach in the program’s first year.

The boaters climb back into their truck, pull onto the highway, and drive away. After a few chilly hours, the sun comes out. Vehicles stop every 15 to 20 minutes. Lily sniffs kayaks, motorboats, and blow-up paddleboards. No sign of mussels today, but Lily doesn’t mind. Every so often, Hurt hides a vial of frozen mussels somewhere on her truck so that Lily can find them and earn some well-deserved play time.

Mussels haven’t infested Montana yet. Dog-handler teams like Lily and Hurt could be critical in keeping these high-stakes invaders away for as long as possible.

Glossary

Mandatory Required

Aquatic ecosystem All of the living and nonliving parts of a lake or river system and how they relate to each other

Population All the organisms of the same group or species who live in a particular geographical area

Native A species that normally lives and thrives in a particular ecosystem

Contamination When something unwanted is introduced to a new environment

Inspection Careful examination