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Dogs sniff out tiny invaders that imperil pipelines

Detecting the mussels is vital to prevent water system breakdowns.

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The sun glistens off the waters in the Yolo Basin Wildlife Refuge. Waterfowl glide serenely overhead.

But Kyrie, a 3-year-old golden-coat Malinois, isn't barking at the birds. She's a picture of calm and control, waiting for the word from her owner to leap into action.

The state Department of Fish and Game is training dogs like Kyrie to sniff out the quagga mussel, an invasive freshwater mollusk that could wreak havoc on the state's water system.

The tiny, pesky clam has already homesteaded in Southern California waterworks, and if it spreads north, it could infiltrate waters like the Yolo Basin wetlands. A relative of the quagga, the zebra mussel has colonized the Great Lakes and has cost the power industry there \$3 billion.

Quaggas are small – the size of a thumbnail – but they can clog pipes and disrupt the food web in lakes, rivers or streams.

Quaggas have spread quickly by attaching themselves to the surface of boats, so Fish and Game officials have stepped up detection at checkpoints and public education efforts.

That's where the dogs come in, with an unusual ability to sniff out the pest.

"The dogs can find the patch of quagga in a couple of minutes. They are very helpful and fast," said Lynette Shimek, a game warden and Kyrie's handler.

On Wednesday, Kyrie deftly sniffed out a clump of quagga on a boat trailer, detecting the tiny shells in a crack behind the wheel.

A trained sniffer like Kyrie costs between \$8,000 and \$12,000, and another \$6,000 a year to maintain. Shimek said using dogs to search for invasive species can save the department about 800 work hours.

Edwin Grosholz, an invasive species biologist at the University of California, Davis, said the quagga is potentially disastrous for the state's pumping and irrigation systems.

"They attach to the walls in canals and cover water pipes," he said. "They literally grow on the inside of all the pipes. Water can't be pumped, and when they reach abundance in certain places, they can really begin to shut down systems."

The mussels arrived in the 1980s, carried to the Great Lakes through ballast water in ships from Europe. They then spread to lakes and rivers across the country, showing up in the Colorado River last January, and were subsequently detected in lakes in San Diego and Riverside counties.

The Metropolitan Water District in Southern California has spent \$2.8 million to control the quagga, and recently approved another \$6 million.

The economic impact of invasive quaggas can be measured, but Grosholz said it's harder to figure out the ecological impact of an introduced species. San Francisco Bay already is home to about 250 introduced species, so Grosholz said some may wonder why we should care about preventing others from taking hold.

"Why should we care about the introduced species? In many cases, ecosystems don't function as well with new species as native species," he said. "Introduced species can change the properties of the whole system – make it difficult for native species and make it easier for other invasive species."

State officials fear the quaggas will show up in Northern California's lakes and rivers, and cause similar problems.

"Clear Lake is among the lakes most at risk," said Alexia Retallack of the Department of Fish and Game. "It could jeopardize the striped bass in the lake."

Quaggas are filter feeders that can suck up all the microscopic phytoplankton, taking food from smaller fish and those higher up the food chain. Retallack said quaggas can spread from the lakes to freshwater portions of the Sacramento and San Joaquin River Delta.

Quaggas like certain types of fresh water – with the right mix of salinity, pH, temperature and calcium level.

"Calcium is the limiting factor," said Andrew Cohen, a senior scientist with the San Francisco Estuary Institute, adding that the Delta has a mixed calcium level, with the Western Delta being the most attractive area for quaggas to take hold.

In addition to the sniffer dogs, Fish and Game field officers are being trained to spot mussels; they'll then step up inspections at checkpoints. Boaters are advised to drain and dry hulls, outboard motors, outdrive units and buckets.

The Department of Fish and Game hopes to train six dogs by the end of the year, and a total of 22 in the next three years, at an estimated cost of \$250,000. Funding comes partly through the general fund, and partly from donations through CalTIP, a nonprofit group that encourages citizens to report polluters and poachers.

Trainer Chip Johnson said the challenge is to find the right dog and match it with the right owner to form the perfect partnership.

"These are family dogs. We can't have vicious dogs that bite kids," he said. "Combined with the right handler to make the right team. That's what we have to do."

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