

Waterwork

Conservation dogs on the trail of whale scat

By Amy Sutherland

Perched on the bow of a small boat racing across Puget Sound, Tucker can catch the scent of killer whale scat from as far away as a nautical mile. When he whiffs its slightly salmony smell, the 60-pound Lab

leans hard over the bow, so hard that his handler must hang on with all his might to keep the dog from toppling overboard. The captain points the boat in the direction of Tucker's black nose.

Tucker is one of the few dogs in the world who has been used to track whale scat on the open ocean. Another is Fargo, a Rottweiler who has tracked right whale droppings on the North Atlantic. Each, with his finely trained nose, has been helping solve puzzles and, in the doing, saving fellow mammals.

"Nobody ever dreamed we could do what we are doing," says scientist Samuel Wasser, director of the Center for Conservation Biology at the University of Washington in Seattle.

Scat provides scientists with a mother lode of biological information about an animal, from its diet to its genetics. It can tell them if an animal is sick or affected by toxins. In scat, scientists hope to find the answers to mysteries, such as why right whales have not flourished.

That is the question that has long nagged Rosalind Rolland, senior scientist at the New England Aquarium. Right whales, despite long, concerted efforts by scientists and conservationists, have yet to thrive. Before commercial whaling nearly finished them off, an estimated 100,000 right whales plied the cold northern Atlantic. By the time a world-

wide hunting ban went into effect in the 1930s, only about 100 called those waters home; some 70 years later, their population still only numbers a mere 300 to 350.

No one knows exactly why right whales have not rebounded. Ship strikes and habitat destruction are suspected, but Rolland also wonders if the female whales are not conceiving. To answer that question, she needs to test the animals' reproductive hormones, but, as she says, "You can't catch a 50-ton whale and take a blood sample."

So, in 1999, Rolland and her husband, fellow scientist and whale researcher Scott Kraus, began scanning the Bay of Fundy for flotillas of bright-orange right

whale poop. Though they found some, it was slow going. The scat only floats on the surface for about a half hour or so before sinking; adding to the difficulty, the notoriously rough water of the Bay of Fundy—tucked between New Brunswick and Nova Scotia—often knocks it apart in short order. On top of that, bad seas frequently kept the research boat in harbor at Lubec, Maine, limiting the opportunities the team had to search. In two weeks, they found five samples.

Wasser visited Rolland in 2001 and told her she had the perfect scenting conditions for a dog. "At first I thought he was out of his mind," she says. In the late '90s, Wasser, working with Washington trainer Barbara Davenport, pioneered teaching dogs to track the scat of terrestrial animals, such as cougars, foxes, moose and even giant anteaters. Wasser's center now has 19 of these conservation dogs, but back then, they had yet to train a dog to



Tucker on the job in Puget Sound.

track scat from a boat on the water. The big challenge was that the dog could not physically lead the trainer to the source, nor nose the scat as is done on land. “This is completely unlike any kind of detection work,” Davenport says.

Davenport started by choosing the right dog for the job. The pooch had to have a strong play drive so he would work long and hard for the chance to tug or catch for a few minutes. Color was also a consideration; a white dog would be exposed to too much sun on the bow of a boat, Davenport says. Finally, the dog needed a wide stance in order to keep his balance on the moving boat. That narrowed it down to a blackish, wide-chested, ball-crazy dog who was not inclined toward seasickness. Davenport tested canine candidates by taking them for a boat ride on a lake.

Once she had selected likely prospects, she trained them to identify the scent of whale scat the same way she would teach a dog to identify any kind of smell—

basically, by repeatedly reinforcing them for discerning it. The problem was, Davenport only had only so much scat to work with. Whale scat is oily and smells of rotten fish. “I have two freezers full of [animal] poop,” Davenport says. “Whale is the worst. Give me wolf or bear any day.”

Davenport eventually settled on Fargo, a Rottie who had overheated and wearied while tracking grizzly scat, which made him a good candidate for standing still in the chill air of the North Atlantic. Wearing an orange flotation jacket and a harness, Fargo joined Rolland’s summer 2003 research team. Though he surprised everyone by getting seasick, Rolland was smitten. “He’s the tall, dark and handsome type,” she says. (Rolland, who’s also a veterinarian, gave Fargo Bonine for his motion sickness.)

Tracking scat on the water puts a lot of pressure on handlers, who can’t just let the dogs lead them to the dung. Rather, they have to read the dogs’ body language. Rolland learned Fargo’s, which

includes putting his nose in the air, throwing his ears forward and wagging his little stump of a tail. Since ocean-borne scat is on the move, Rolland also had to learn to read the wind and watch the bay’s swirling currents, guessing from the direction Fargo’s nose pointed where the scat might drift. As the boat came close to the sample, Fargo would sit and Rolland would play ball with him while a field assistant netted the sample.

With Fargo on board, Rolland’s team found as many as 10 to 12 samples a day, sometimes one every 20 minutes or so. She brought Fargo back for the next three summers until funding for his services ran out. Rolland hopes to have a pooch back on board for the summer of 2010. In the meantime, she is still testing the 300 samples that Fargo’s nose found. “The lowest-tech technique turns out to be the most effective,” says Rolland.

On the other side of the continent, Tucker is helping solve another whale mystery. In the late 1990s, one-fifth of



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the orcas in Puget Sound died. Given that the orca's primary prey, Chinook salmon, had declined dramatically, the whales may have starved to death. They also may have been poisoned by PCP or struck and killed by boats, or all the above. To tease out the answer, Sam Wasser needed scat, a lot of it.

Like Rolland, Wasser began searching for whale feces himself, but found it even slower going. Orca scat is the color of the water and smells mostly like fish. Even when Wasser found it, the soft and slimy stuff would often seep through the collecting net. When Wasser and his assistant were lucky enough actually net some orca waste, the sample was typically small, about the size of the end of a person's little finger.

That changed in the summer of 2007 when Wasser enlisted Tucker, a five-year-old Lab mix. In response to the cue "Find it," Tucker led Wasser to five times more scat. Moreover, the samples were far bigger—big enough, the scientist says

with relish, "to fill a sandwich bag."

Tucker is Wasser's favorite dog at the center. The happy go-lucky mutt has worked in sub-zero temperatures tracking elk and wolf scat, which he found two feet under the snow. Tucker's not only a hard worker, he hates the water, so there's no worry about him jumping in—though he hangs off the side of the boat as it nears the orca scat. Wasser rewards the dog with a few minutes of tug.

Despite his training, Tucker is only as good as his human team. At first, Wasser underestimated the distance at which Tucker could pick up the scent. Arriving at the empty stretch of water that Tucker had seemed to indicate, Wasser assumed the scat had sunk. In fact, the team hadn't gone far enough.

Like the Bay of Fundy, Puget Sound made the task tricky. The boat must move perpendicular to the wind so that Tucker can catch a scent, but given the sound's many straits and gaps between islands, wind direction shifts constantly. Wasser

checks it by squeezing baby powder into the air. "Sometimes, the whole boat is white from the baby powder," he says.

Not only is Wasser often covered in baby powder, he's also often soaked. The crew periodically stops at islands so the dog can relieve himself. Because Tucker despises water, Wasser has to wade in and carry the dog to the island and then back to the boat, being careful to keep his paws dry. "I can't tell you the number of times I've gotten completely drenched and he hasn't," Wasser says.

All this wading and baby powder and games of tug are paying off, however, as Wasser begins to piece together an answer to why the orcas died off. The samples show a drop in the thyroid hormone, which indicates that the whales are not getting enough to eat. He needs to run more tests on the scat he has as well as what he collects this summer before he can be certain. But, thanks to one damp black nose, Wasser may solve this mystery. **B**



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