

GIZMODO

This Dunkable Drone Will Suck Up Whale Snot for Science

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Collecting biological samples from a whale is about as difficult as it sounds. The animals are easily stressed by the rumblings of large research vessels or manned helicopters and quick to run. Instead, a team of researchers has developed a novel quadcopter solution that collects a different sort of secretion than blood: expelled mucus.

Appropriately named "SnotBot," this multicopter is a collaboration—several years and five prototype iterations in the making—between the Intelligent Vehicles Lab at Olin College's and Ocean Alliance. Since whales are difficult to study up close and [the rules for observing them](#) are so strictly enforced, getting blood samples is a difficult task. And it's nearly impossible if you're collecting to the samples to study the creature's stress levels since the very act of you approaching the whale and drawing blood *is already freaking it out*.

So, a new method was clearly necessary, one that didn't stress the whales but could still provide researchers with the valuable hormonal concentration data that they require. Olin College researchers believe that method involves "a multicopter that the marine biologists could use to collect a sample of whale 'snot' — the fluids that are expelled from the blowhole of whales. Marine biologists expect to find hormones, DNA, dead skin tissue, and a concentration of pollutants in the snot," according to [Weeprojects](#), the UAV company contracted to help design and build the platform.



The third and fourth iterations

The current, fifth, iteration of the flyer is slightly smaller than a mini-fridge and bears little resemblance to its predecessors due to a recent and severe design change: its un-waterproofing. The team spend years trying to make the SnotBot an ruggedized UAV, protected from corrosive saltwater in its water-tight shell and collecting snot samples in a small dangling pail. That plan did not work out. Instead, the new iteration forgoes the hanging pail for a sterilized surgical sponge strapped to its belly and ditches its waterproof shell for a quick bath of distilled water after returning from missions.

The team still faces a number of other technological and regulatory hurdles before the SnotBot gets off the ground, from making the control scheme easy enough that even a marine biologist can use it to giving the drone enough autonomous smarts to know what kind of whale it's following. The biggest challenge, however, is convincing the FAA to change its rules regarding UAV operations.

"The government could issue rules that say, 'Never fly lower than this altitude over a whale with a drone,' " said Andrew Bennett, a professor of mechanical engineering at Olin told the Boston Globe. "Right now, the rule for flying over a whale is 1,000 feet, because they assume you're a person in an airplane. And the FAA gets angry if we fly a drone higher than 400 feet."

To convince the FAA that their drone is safe enough and quiet enough to use around these massive sea creatures, the team went ahead and built a "whale surrogate": a small inflatable raft outfitted with audio sensors that mimic what a whale would hear both above and below the waves. They've been performing flyover testing with the SnotBot Mk V to great effect. "We found that at 10 feet above our whale surrogate, it was basically almost undetectable," Iain Kerr, chief executive of Ocean Alliance, told the Boston Globe. Results from these tests will be folded into the team's report the National Marine Fisheries Service at the end of the month. [[Boston Globe](#) - [Weeprojects](#)]