SCIENCE

America Desperately Needs More Sterile Screwworms

Ranchers are waiting for hundreds of millions of sterile flies to be produced, or for a technological breakthrough.

By Sarah Zhang

Fernando Llano / AP

This time a year ago, experts were already predicting the return of flesh-eating screwworms to the United States: a matter of not *if* but *when*, Wayne Cockrell, a Texas rancher, lamented to me at the time. Screwworms had been eradicated from the U.S. to Panama and then were cordoned off through the continual release of almost 20 million sterilized screwworms every week over the narrow Isthmus of Panama. But screwworms, which grow into flies as adults, had jumped the cordon and infested a large swatch of Mexico by last year. This month, they indeed reached Texas.

The math of the crisis then and now is brutally simple: The U.S. Department of Agriculture's screwworm program cannot produce enough sterile adults to get the parasites under control. A factory in Panama has already quintupled its weekly production to its physical max, just more than 100 million, but more, many more, flies are needed to re-eradicate the screwworm: 500 million.

Two new factories are under construction, but both were delayed, according to reporting in *Politico*, by the Trump administration's aggressive reviews of government spending last year. The first, in Mexico, will be fully online only this fall and the second, a much larger one in Texas, in the fall of 2028. "To win this war, it's all about the number of sterile flies," Cockrell, who is also second vice president of the Texas and Southwestern Cattle Raisers Association, reiterated to me recently.

In the meantime, the screwworms will keep percolating through the country, and ranchers will keep finding the grisly, telltale wounds in their livestock. The best that ranchers can do until more sterile flies arrive is "hold the line, weather the storm," Jason Sawyer, the chief science officer of the East Foundation, an agricultural-research organization that manages six ranches in Texas, told me. Optimistically, he expects the re-eradication of screwworms in the U.S. to take three years. Realistically, he thinks it'll take five years.

The parasites pose the biggest threat to cattle—which could push beef prices even higher—but they can also infect pets, wildlife, and even the unlucky human. After the first case of screwworms was discovered in the umbilical stump of a Texas calf on June 3, 15 more animal cases quickly came to light. The cases have been scattered over hundreds of square miles, a worrisome geographic spread that suggests that screwworms have dispersed in the U.S. beyond one isolated outbreak. Experts told me that they hope and expect the screwworm will not spread far outside Texas, but one case, in a dog, had already been found just over the state border in New Mexico.

Fernando Llano / AP

The wait for more sterile flies is all the more frustrating because the technology itself is so old. It has remained fundamentally unchanged since screwworms were originally eradicated in Texas, in the 1960s. Screwworms are reared in a factory and then blasted as pupae with radiation to render them impotent. When released en masse as flies, sterile males mate with wild females to produce nonviable eggs. Over the years, the screwworm program refined this technique but saw no reason for radical overhaul. Why mess with something that's not broken?

In 2026, the outlook is quite different. The search is on for anything and everything that could possibly mitigate the long wait for more sterile flies. The USDA last week announced $105 million in funding for 40 projects that run the gamut, including new irradiation techniques and detection dogs and novel insecticides.

The USDA has even resurrected a male-only strain of genetically modified screwworms developed nearly a decade prior. Factory-reared males and females are currently released together, but only the sterile males are actually useful for eradication. (They mate many times, while female screwworms only mate once.) To that end, Maxwell Scott, an entomologist at North Carolina State University, began working on a male-only strain for the USDA back in 2010. The lab science went quickly, he told me, but getting approval for a field trial in Panama took three years. His team then created an even more efficient strain, which was never field-tested. The male-only project more or less went on pause, which frustrated Scott. “It was a lot of work to make these strains, and I thought they were good,” he said recently. “It wasn’t my decision.” He stopped working on screwworms.

Last year, with the screwworm’s return imminent, Scott heard that the USDA was interested in a newer version of the male-only strain again. The agency in March submitted paperwork to register a version of the more efficient strain—newly dubbed “NovoFly”—as a pesticide with the Environmental Protection Agency. (The USDA did not respond to my questions about when NovoFly would be ready for use.) Scientists are still waiting on approval for a field test in Panama, though. If the male-only strain is proven to work soon and deployed quickly, switching to it could ease the sterile-fly shortage. Scott also received a grant to continue working on a male-only strain as part of the USDA’s funding push.

Ironically, the basic technology behind these male-only strains is outdated now, Scott said. Since the strain's original creation, CRISPR has revolutionized scientists' ability to manipulate DNA in the lab. Scott is now interested in using CRISPR to create a "gene drive" that forces sterility to spread among wild screwworms. Theoretically, a single release of flies carrying a gene drive could even, over time, sterilize the entire screwworm population. At that point, screwworms could feasibly become eradicated from not just North and Central America but also South America, making the screwworm barrier at Panama entirely obsolete. But gene drives are controversial precisely because they may be uncontrollable once out in the wild; the technology in screwworms is not ready for even a field trial.

For now, Texas ranchers awaiting more sterile flies must rely on old-school strategies dating to the pre-eradication era: inspecting cattle, treating wounds with anti-screwworm drugs, and curbing the movement of infested animals. "When everybody in an area is doing that, you can keep the numbers low in the environment. But all it takes is one neighbor, as a source, that is not," Cockrell says. And the work is labor intensive, because cattle herds can be spread out over hundreds or even thousands of acres, and ranches routinely employ fewer employees than they used to. "I've had people ask, 'My parents told me about how they had to manage this in the '60s,'" Sawyer recounted. "'I don't know if I have the capacity for that.'"

Even if ranches get a good handle on their own livestock, wildlife may serve as continual reservoirs of breeding screwworms. The role of wildlife in today's outbreak is a real "wildcard," Sawyer said. Deer populations in particular boomed following the eradication of screwworms. (It's directly related: Screwworms used to kill 40 to 80 percent of fawns in Texas every year.) "Candidly, there's not any great answers" for screwworm mitigation in wildlife, he told me. How much wild animals will contribute to the outbreak will become clearer only in a few years' time—at which point the eradication effort will hopefully have enough flies to push the screwworms back to the Mexican border, and eventually even the Panamanian border.