Science, Technology Assessment, and Analytics

SCIENCE & TECH SPOTLIGHT:

NEW WORLD SCREWWORM ERADICATION

GAO-27-109347, November, 2026



WHY THIS MATTERS

New World screwworm is a parasitic fly that could cost the U.S. cattle industry billions of dollars per year. The eggs laid by screwworm flies hatch into larvae that infect cattle, sheep, and other animals, causing painful wounds and death if untreated. Over 100 total cases have been identified in the U.S. as of November 2026. Experts are concerned that existing control capabilities, which use sterile flies, may be insufficient to combat new outbreaks.

KEY TAKEAWAYS

- Ongoing research uses genetic engineering to design new systems that interrupt screwworm reproduction.
- New technologies could more rapidly reduce screwworm populations or force extinction.
- These technologies face an uncertain regulatory environment and raise ethical questions.

THE TECHNOLOGY

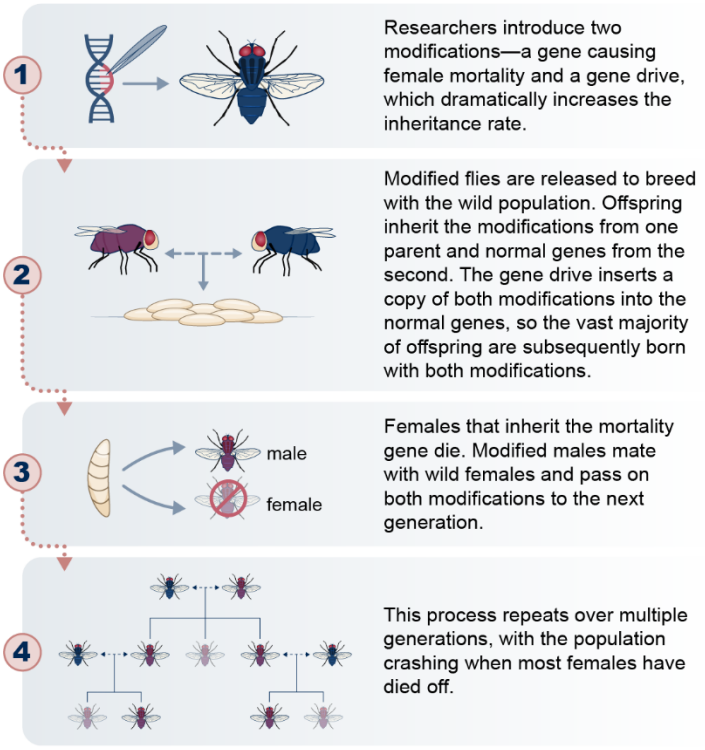
What is it? Researchers are using genetic engineering to design new ways to interrupt screwworm reproduction. Two prominent approaches—genetically engineered male fly strains and gene drives—have the potential to reduce the wild population more effectively than the current technique.

How does it work? Genetic engineering aims to improve the efficacy of the current method—sterile insect technique. With this technique, the U.S. and other nations produce New World screwworm flies in a contained facility. They use radiation to sterilize them, then release them into the wild. The sterile males mate with females from the wild population. Because females only mate once, those females produce no offspring, thereby reducing the population. This technique is inefficient, however, because it also produces females.

Genetically engineered male-only fly strains save on feed, energy, and facility resources by inserting a gene that causes female offspring to die off. As a result, only males are produced. Those males require less radiation for sterilization and more efficiently suppress the wild population.

Gene drives, by comparison, do not use sterile flies. Instead, this approach engineers flies to spread a self-propagating gene that is designed to suppress or eliminate the population (see figure 1).

Figure 1. Gene Drive Transmitting a Female Mortality Gene



Source: GAO (analysis and illustration); GAO adaptation of Centers for Disease Control and Prevention (fly). | GAO-27-109347

How mature is it? The sterile insect technique is mature. A facility in Panama jointly funded by the U.S. releases about 100 million sterile flies per week to stop New World screwworm from spreading north from South America. However, in 2023 the pests broke through this biological barrier. In 2026, the U.S. Department of Agriculture (USDA) released sterile flies in the U.S. and Mexico to control the new outbreak.

Researchers successfully engineered male-only flies at the facility in Panama, but regulatory approvals are needed before they can be exported or deployed in the U.S. or abroad. As of November 2026, the USDA is seeking an emergency use exemption from the Environmental Protection Agency (EPA) for a strain of genetically engineered male flies.

Researchers have successfully used gene drives to reduce populations of other species of insects. For example, trials with caged mosquitoes have shown rapid spread of a gene that reduced population. For New World screwworm, Uruguay has approved gene drive trials with caged flies, but the technique has not been used in the wild.

OPPORTUNITIES

- **Increase efficacy.** Genetic engineering could improve sterile insect technique efficacy and reduce costs.
- **Help other eradication efforts.** Improved genetic engineering screwworm eradication technologies might also benefit efforts to counter other parasitic or disease-carrying insects.
- **Permanent solution.** Driving this species extinct could eliminate the need for further control efforts.

CHALLENGES

- **Regulation.** Genetic engineering faces an uncertain regulatory environment and ethical concerns over deliberately driving a species extinct. U.S. regulations do not clearly define gene drives, and agencies may regulate them differently depending on their application or use case.
- **Gene drive resistance.** Wild populations could develop genetic mutations that render a gene drive ineffective over time.
- **Transient infections.** Gene drives are spread by fertile flies. Therefore, deploying this approach initially produces some viable offspring, which would infect some animals.

POLICY CONTEXT AND QUESTIONS

- What factors could policymakers consider when deploying screwworm eradication technologies?
- What information might policymakers need to potentially regulate gene drives and other emerging technologies?
- How might policymakers determine that species extinction is warranted?

SELECTED GAO WORK

Public Health Preparedness: Experts Identified Actions to Improve Surveillance for Emerging Disease Threats, GAO-26-107610.

Alternatives to Radioactive Materials: A National Strategy to Support Alternative Technologies May Reduce Risks of a Dirty Bomb, GAO-22-104113.

Science & Tech Spotlight: CRISPR Gene Editing, GAO-20-478SP.

SELECTED REFERENCE

Akbari, O. "Resurgence of the New World screwworm and the future of genetic biocontrol," *Trends Open,* 2026, https://doi.org/10.1016/j.treopn.2026.06.015.

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Source (header): U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service, Fly (Figure 1): https://wwwn.cdc.gov/phil/Details.aspx?pid=13391. | GAO-27-109347.