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The Screwworm is Back - And It's Closer to US Soil Than It's Been in Decades

Biology * Climate Change * Public Health

1. Introduction: A Renewed Agricultural Crisis at the U.S. Border

For decades, veterinary epidemiology and multinational biological containment confined the New World screwworm (Cochliomyia hominivorax) south of Panama's Darien Gap, shielding North America from traumatic wound myiasis.[1][2] On May 29, 2026, however, the United States Department of Agriculture (USDA) confirmed an active screwworm infestation in a six-month-old sheep in Coahuila, Mexico, just 31 miles from the Texas border.[4] This detection marks the leading edge of a progressive northward resurgence initiated when the Panamanian biological barrier was breached in 2022-2023 amid pandemic-era sterile fly production disruptions, unregulated livestock movement, and wildlife migration.[5][6] By late May 2026, authorities were tracking nearly 2,000 active cases in Mexico, with dozens within 100 miles of Texas.[8]

With the U.S. cattle herd at a 75-year inventory low following prolonged drought, reintroduction of this obligate parasite into the North American livestock ecosystem threatens to disrupt beef supply chains, inflict billions of dollars in losses, and create a direct public health hazard.[2][4]

2. Pathogenesis of Myiasis and Climatological Constraints

Unlike facultative necrophagous blowflies such as Cochliomyia macellaria, larvae of C. hominivorax (family Calliphoridae) are obligate parasites of living warm-blooded flesh.[10][11] Gravid females orient to fresh wounds -- including tick bites, barbed-wire scratches, neonatal umbilici, or branding and dehorning sites -- depositing shingle-like masses averaging ~343 eggs.[9][10] Hatching within 12-24 hours, first-instar larvae burrow head-downward with chitinous mouthparts while secreting proteolytic enzymes (proteases) that liquefy living tissue.[4][10] Across five to seven days and three larval instars, foul-smelling exudates attract secondary strikes packing thousands of maggots into a single cavity; untreated hosts often die within two weeks from bacterial sepsis, toxemia, or hemorrhage before mature larvae drop into topsoil to pupate.[9][14]

As a cold-intolerant species, C. hominivorax develops between roughly 14.5 deg C (58 deg F) and 43.5 deg C (110 deg F), peaking near 27.5 deg C (81.5 deg F).[15][16] Adult flies die below 20 deg F, larvae perish on 15-20 deg F soil, and pupation halts below a 46 deg F mean daily soil temperature.[15] While historic U.S. overwintering was restricted to subtropical Texas, the Southwest, and Florida, adults fly up to 12 miles, outbreaks advance 0.75-1.25 miles per day in warm weather, and climate change is shifting winter survival boundaries northward.[9][15][16]

| Biological Life Stage | | Optimal / Favorable Conditions | | Restrictive / Lethal

Thermal Limits |

| Complete Life Cycle | | ~27.5 degrees Celsius (81.5 degrees Fahrenheit); 2-3 weeks duration [16] | | Cooler climates extend cycle to 3-4 weeks or months [16] |

| Adult Activity & Survival | | Highly active above 59 degrees Fahrenheit [16] | | Extreme mortality below 20 degrees Fahrenheit air temperature [15] |

| Pupal Development (Soil) | | Moist, warm soil; 1-week duration [14] | | No development below 46 degrees Fahrenheit mean average daily temp [15] |

| Larval Ground Transition | | Mild surface temperatures | | High mortality if dropping into 15 to 20 degrees Fahrenheit environments [15] |

3. The Sterile Insect Technique and Collapse of the Panama Barrier

Pioneered by USDA entomologists Edward F. Knipling and Raymond C. Bushland, the Sterile Insect Technique (SIT) exploits female monogamy: flooding an environment with irradiated sterile males forces wild females to lay unfertilized eggs, inducing an Allee effect and severe population bottleneck.[1][10][16] Bushland developed artificial beef-and-blood larval diets at Menard and Kerrville, Texas, and adapted Hermann Joseph Muller's radiation mutagenesis research to sterilize pupae with gamma or X-rays.[1][17] Validated on Cura ao in 1954, SIT eradicated screwworms from Florida (1959), the United States (1966), Mexico (1990), and Central America (2000), establishing the permanent Panama barrier in 2003.[1][12]

| Milestone Year | | Eradication Achievement / Event |

| 1950s | | Successful proof-of-concept eradication on the island of Curacao [12] |

| 1959 | | Screwworm declared eradicated from the Southeastern United States (Florida) [12] |

| 1966 | | Screwworm declared eradicated from the entirety of the United States [3] |

| 1990 | | Complete eradication achieved in Mexico [18] |

| 1992 - 2000 | | Eradication progressing through Belize, El Salvador, Honduras, Nicaragua, Costa Rica [1] |

| 2003 | | Establishment of the permanent biological barrier facility in Panama [1] |

| 2016 - 2017 | | Temporary outbreak in Florida Keys (Key deer) swiftly eradicated via SIT [15] |

Following 2022-2023 pandemic supply disruptions and illicit cattle movements that breached the 100-million-fly-per-week Panama barrier, the fly entered Chiapas in November 2024 and bypassed secondary containment in Oaxaca and Veracruz by May 11, 2025.[2][7][9] Suppressing the Mesoamerican resurgence now requires 300-500 million sterile flies per week.[2]

4. Chemical Ecology Surveillance and Economic Threat Modeling

Beginning in June 2025, the USDA deployed over 100 Tanglefoot-coated PVC pipe traps along the southern border alongside 7,500 fruit fly traps, baited with volatile

sulfur lures mimicking decomposing tissue.[20][21] Swormlure-4 (dimethyl disulfide) remains the preferred standard over Swormlure-5 (dimethyl trisulfide, which attracts excessive non-target C. macellaria) and Bezzilure-2 B.[20][21][22]

| Chemical Attractant / Lure | | Primary Active Compound | | Target Specificity and Field Efficacy |

| Swormlure-4 | | Dimethyl disulfide | | High capture rate for C. hominivorax; preferred industry standard [20] |

| Swormlure-5 | | Dimethyl trisulfide | | High capture rate, but attracts massive numbers of non-target C. macellaria [21] |

| Bezzilure-2 B | | Proprietary mix for C. bezziana | | Demonstrated lower comparative efficacy for New World Screwworm in trials [22] |

In Texas -- home to 12.5 million cattle (14% of the U.S. herd) -- inflation-adjusted projections based on the 1976 outbreak (20.6% cattle infestation rate) estimate $732.6 million in direct producer losses and $1.8-$1.9 billion in total annual state economic impact, compounded by ranch labor shortages and the May 2025 suspension of Mexican cattle imports.[4][9]

| Economic Impact Metric | | 1976 Outbreak Data (Unadjusted) | | 2024/2026 Inflation-Adjusted Projection |

| Cattle Cost per Case | | $81.51 | | $452.14 [9] |

| Sheep & Goat Cost per Case | | $32.38 | | $179.61 [9] |

| Total Direct Producer Losses | | ~$132.1 Million | | ~$732.6 Million [9] |

| Total Texas Economy Impact | | ~$329.6 Million | | ~$1.82 Billion - $1.9 Billion [4] |

5. Border Biosecurity, Veterinary Countermeasures, and Zoonotic Risk

While CBP warnings at Texas ports target infested companion dogs and USDA "tick riders" patrol border corridors, the FDA issued spring 2026 Emergency Use Authorizations for systemic doramectin (Dectomax), topical F10 cypermethrin/antiseptic sprays and ointments, and Negasunt powder.[9][13][23]

| Authorization Date | | Pharmaceutical Agent / Product | | Formulation | | Target Application and Authorized Species |

| March 10, 2026 | | F10 Antiseptic Wound Spray (Cypermethrin, Benzalkonium chloride, Polyhexanide) | | Topical Spray | | Immediate wound barrier; Multiple Species [23] |

| April 24, 2026 | | F10 Antiseptic Barrier Ointment (with insecticide) | | Topical Ointment | | Lasting wound coverage; Cattle, Equine, Avian, Exotics [23] |

| April 27, 2026 | | Negasunt Powder | | Topical Powder | | Wound dusting; Multiple Species [23] |

| May 19, 2026 | | Dectomax / Doramectin (Avermectin-class) | | Injectable Solution | | Systemic larval toxicity; Dairy Cattle, Equine, Swine, Sheep, Deer [23] |

In humans, over 720 cases and six deaths were recorded across Central America and

Mexico by late 2025, requiring surgical extraction, while an August 2025 travel-associated case in Maryland triggered a 20-mile USDA surveillance ring.[3][19][24]

6. Conclusion: Rebuilding Continental Defense-in-Depth

The May 2026 Coahuila detection underscores that single-site SIT dependence in Panama was a critical vulnerability; protecting North American agriculture now requires redundant domestic sterile-fly factories, winterized calving and branding schedules, and prophylactic veterinary endectocides.[2][4][9]

Updates... (Nov 20, 2026): Following the May 2026 Coahuila border alert, USDA confirmed the first U.S. animal case of the resurgence on June 3, 2026, in a calf in Zavala County, Texas. By November 18, 2026, more than 130 U.S. animal cases had been confirmed across the American Southwest -- primarily in Texas, including a November 18 detection in Hidalgo County triggering Texas Animal Health Commission Infested Zone 37 -- and in November 2026 USDA launched a 228-position hiring initiative to staff its fast-tracked domestic sterile-fly production facility at Moore Air Base near Edinburg, Texas.[3][24]

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