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ENTOMOLOGY



Agriculture

Pastured on meat and blood, screwworms thrive in the fly factory in Texas.

Screwworms Sneak Back

Once eradicated in the U.S., screwworm flies are back in action in the Southwest.

by Frank Sartwell

The United States is being infiltrated from the south. Air strikes are being mounted to interdict the guerrilla forces, but a few infiltrators get through. Pinpoint bombing raids over U.S. territory, called in by the victims of the infiltration, help stem the flow.

The infiltrators are pregnant female screwworm flies, who fly through a militarized zone south of the Rio Grande to lay their eggs on wounded mammals above the border. Hatched out, these larvae eat the animals alive.

This year's first case of screwworm attack came on a calf in Willacy County, Texas. The rancher sent the maggots to the humming screwworm fly factory in Mission, Texas, which identified the pest and ordered its air force into action.

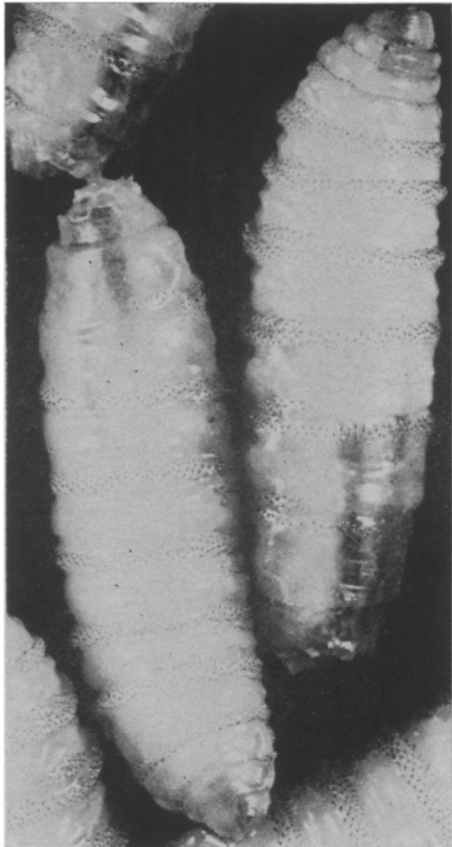
Loading a light plane with sterile flies, the attackers flew over the ranch area and dropped them. Any fly that mates with the new arrivals will have no offspring, and a whole screwworm population is sterilized.

Before the sterilization campaign began in 1958, ranchers in the Southeast and Southwest lost an estimated \$15

million every year to the half-inch maggots of the screwworm fly. By July 1959, the flies had been exterminated in Florida and adjacent states—at a Federal-state cost of some \$7 million. There has not been a case of native worm bite in the Southeast since.

But the Southwest faced problems unknown in Florida. The eastern population of screwworm flies had been self contained; Texas borders on Mexico, with a vast reservoir of insects. Mexican ranchers, impressed with the results along the barrier zone, have expressed interest in using the technique throughout the country. They would, in turn, establish a barrier across southern Mexico to keep out the flies to the south.

By use of atomic radiation to sterilize hordes of hand-raised screwworm flies, the Department of Agriculture has actually eradicated this expensive pest as a native menace in the United States. But a few sneak in from Mexico each year, despite a barrier zone ranging from 300 to 500 miles deep across northern Mexico. This wall against screwworm flies is composed of the flies themselves—sterile individuals that



Agriculture

Mammal-eating larvae.

mate with fertile wild flies to kill off the race.

The sterility technique, developed by Department of Agriculture specialists to deal with this particular pest, is now also in use against melon flies on Pacific islands such as Rota and Guam, where the flies have been exterminated. In Africa, tests are underway to see if the tsetse fly, carrier of sleeping sickness, can be eradicated. Such a triumph would open thousands of square miles to productive use.

Scientists are trying to apply the technique to at least a dozen other insects, including the boll weevil.

Release of the sterile flies has several advantages over other forms of insect control. It is highly specific—affecting only one species. It offers complete extermination in short order—provided the area can be closed to outside sources of the pest. It leaves no chemical residue to possibly poison animals or birds, or to pollute the waters or soil.

So promising a technique is not being left to the insect world alone. Other experimenters are examining its uses in cutting down the number of nuisance birds such as starlings, and even trash fish that compete for food with more desirable types.

The screwworm fly, a particularly unappealing insect, lays its eggs beside open wounds in an animal's hide. If the eggs hatch—a circumstance becoming

less frequent—the larvae burrow into the animal's flesh and begin to consume it. The original wound may be tiny—a steer scratched by barbed wire, the raw navel at a deer's birth, even a tick bite on the family dog. But a severe attack of the maggots can kill a full-grown steer.

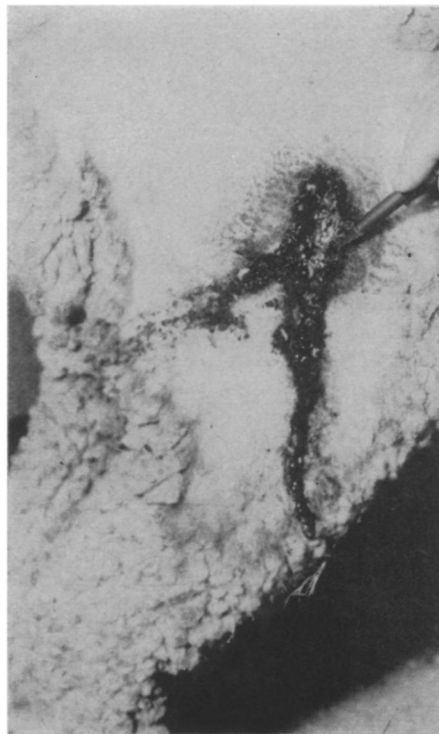
After feasting on its living host, the screwworm drops to the ground to pupate, the adults hatching out days later to continue the cycle.

At Agriculture's fly factory in Mission the process of sterile fly production has been automated to turn out as many as 150 million of the pests a week. Some 300 persons work in shifts around the clock, pampering the insects, allowing them to breed, feeding them a diet of whole meat and beef blood, and harvesting the pupae.

Extreme precautions are taken in the fly factory to prevent the escape of any of the unsterilized insects. Every crack is sealed with tape; every worker or visitor must wear a special white uniform, and, when going from one room to another, stop and check his uniform for flies. When leaving for the day, each man must take a shower.

Not that anyone objects. After a day with the rearing medium, and the droppings of the flies, a shower is most welcome.

The pupae are exposed to cobalt 60 radiation, which makes them sterile, then boxed until the adult flies hatch and can be airdropped to help wipe out their own kind.



Agriculture

Wounded victim of the fly.

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