Screwworm Fly Eradication: Local Lab Played Major Role in Eliminating the Pest from Texas

Ever hear of the screwworm fly? If not, you can thank the local USDA-Animal Research Service Knipling-Bushland U.S. Livestock Insects Laboratory on route 16 just north of I-10. Ask anyone who was ranching in Texas before the mid-1960s and they can tell you about the screwworm fly.

In 1935, in the middle of the Great Depression and the middle of the Dust Bowl, Texas ranchers were faced with yet another economic disaster, the loss of an estimated 160,000 head of cattle due to the screwworm fly. During all of these depressed times, in the 1930s, Texas ranchers had losses of many millions of dollars due to this insect.

The screwworm fly is about twice the size of a house fly. It likes to both feed on and lay its eggs on blood, open wounds or soft tissue of animals. The eggs then hatch and the larva (maggots) then feed on the flesh, keeping the wound open and subject to infection. And the wound that attracts the flies can be as small as a tick bite, so all wild animals, pets, livestock and even humans are susceptible.

I remember as a 4-H kid being taught by Ag agent Paul Gross on how to look for flies and larva on my calves in the 1950's.

Research conducted by scientists at the Kerrville lab, and facilities associated with the Kerrville lab, especially by Drs. Edward Knipling and Raymond Bushland (for whom the lab is now named), in the late 1930s up into the 1950s demonstrated a way to eradicate the fly. These researchers found that if the pupa were irradiated with radioactive isotopes they could be made sterile, and further that the female screwworm fly would only mate once in her life, so that if she mated with a sterile male, no eggs would be produced and the population of flies would decline.

So, if a way to produce huge numbers of sterile male flies could be found, and these flies were released into the wild populations, many of the wild, fertile females would mate with the sterile males and not be able to produce eggs. If this process were repeated over several life cycles of the flies (3-6 weeks), then the population would decrease drastically.

The problem with this idea, however, was that it required the production of very large numbers of sterile flies being released into the wild fly population. This required learning how to raise, feed, sterilize, transport and release literally tens of millions of sterile flies at the right place and the right time. Much time and effort by many

researchers was required to learn how to do all of this, but that is exactly what was done.

The principle of eradicating a wild screwworm fly population was successfully demonstrated on the island of Curacao in 1954. In 1955-1957 the technique was applied to 2000 square miles around Orlando, Florida, and by 1959, screwworms had been eradicated from the southeastern U.S.

In 1962 the program to eradicate the flies from the Southwestern U.S. was begun using flies produced in the Kerrville Lab. Subsequently, a mass production facility was built in Mission, Texas. By 1966 the USDA declared screwworms eradicated from the Southwest U.S. There were several outbreaks that occurred between 1966 and 1982, caused probably by cattle imported from Mexico where the fly had not been totally eliminated.

Since then, sterile screwworm fly production facilities have been moved to Mexico and to Central America. By 1991 Mexico was declared screwworm free, followed eventually by all of Central America down to Panama by 2000.

One consequence of this work, other than the prevention of hundreds of millions of dollars in losses to American ranchers, and now Central American ranchers, is the effect this program has had on the white-tailed deer population. It has been said that the screwworm fly was the last remaining effective natural predator (other than man) for the white-tailed deer in Texas.

The elimination of the screwworm fly from Texas corresponds to the beginning of the last significant increase in deer populations. Now these increased deer populations are responsible for the decline in the number of hardwood trees and shrubs and the reduction in understory habitat in the Hill Country.

Thanks to Dr. Steven Skoda, Research Leader in the Screwworm Research Unit of the Kerrville lab for supplying me with some of the facts for this article.

Until next time…..

Jim Stanley is a Texas Master Naturalist and the author of the books “Hill Country Ecology,” “Hill Country Landowner’s Guide” and “A Beginner’s Handbook for Rural Texas Landowners.” He can be reached at jstmn@ktc.com. Previous columns can be seen at www.hillcountrynaturalist.org , or at Riverside Nature Center at https://riversidenaturecenter.org/past-blogs-from-a-friend/