

Cattle Fever Tick Surveillance in Texas

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Cattle fever ticks (*Boophilus microplus* and *Boophilus annulatus*) were likely first introduced to North America as an exotic tick species, arriving on cattle and horses transported to the New World by Spanish colonialists.¹ These ticks are capable of carrying and transmitting bovine babesiosis, once called “Texas fever”, which is a protozoal disease caused by *Babesia bigemina* or *Babesia bovis*. Now considered an exotic disease in the United States, bovine babesiosis has caused significant economic damage to the cattle industry in the past through production losses and high mortality.

One of the more notable accounts of babesiosis in the United States occurred in 1868, when a disastrous epizootic broke out among native cattle in Illinois and Indiana. As a result of the importation to these States of apparently healthy cattle from Texas, 15,000 head of cattle died.² At the time, Texas cattle were relatively immune to the disease because of frequent exposure to fever ticks, but when Texas cattle carrying infective ticks were driven to northern markets, the resident susceptible cattle had no protective immunity and were essentially eliminated by the disease.

Bovine babesiosis led to the creation of a National Cattle Fever Tick Eradication Program in 1906, which was targeted to include all or part of 14 southern States: Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Virginia, Tennessee, Kentucky, Missouri, and southern California, where cattle industries were being crippled by the disease and exclusion from the northern markets.³ By 1943, the eradication campaign had essentially been declared complete, and all that remained was a permanent quarantine zone along the Rio Grande River in south Texas. This permanent quarantine zone exists to this day as an approximately 500-mile-long swath of land stretching from Del Rio to Brownsville, Texas, ranging in width from several hundred yards to approximately 10 miles.

Surveillance and Control

Fever-tick surveillance and control activities within the quarantine zone are carried out by U.S. Department of Agriculture (USDA)-Animal Health and Plant Inspection Service (APHIS) - Veterinary Services (VS) Fever Tick Eradication Program personnel, including 61 mounted inspectors known as “tick riders”. While mounted, tick riders patrol the Rio Grande River along the Mexican border, conduct range inspections of premises within the quarantine zone, and apprehend stray and smuggled livestock from Mexico. Surveillance and control activities are dependent upon the process of “scratching” for ticks, which involves an inspector using his fingers to feel the skin of the animal in its entirety, from head to tail, searching for ticks. Livestock tick inspections are performed prior to sale at the seven south-Texas livestock markets nearest to the quarantine zone. This process helps ensure that cattle originating from the free-zone in south Texas are truly free of ticks.

Prior to movement out of the quarantine zone, all cattle must be scratched, declared tick-free, and dipped in coumaphos, an organophosphate acaricide. Horses leaving the quarantine zone are likewise required to be inspected and treated prior to movement; however, they are sprayed with coumaphos rather than dipped. When fever ticks are found on cattle, the premises of origin is

considered infested and placed under quarantine. Cattle on all adjacent premises are scratched, and traceback work begins in order to locate, scratch, and treat any livestock that have left the herd and/or to find the source of livestock added to the herd. An owner of the infested herd is given two options: (1) Leave the cattle on infested pasture and scratch and dip them every 14 days for 9 consecutive months to ensure that all ticks are removed from the pasture; or (2) Process the cattle with two successive 'clean' dippings, 10 to 14 days apart, where no ticks are found prior to dipping. The pasture is then vacated of all livestock for a period of 6 to 9 months, or longer, to break the lifecycle of the ticks.

Due to the cost and general burden of successive dipping of livestock, most producers opt for vacating the pasture. Unfortunately, as a result of vacating pastures, there has been an increase in the maintenance of ticks on wildlife, most notably white-tailed deer and nilgai. Although cattle are the preferred host of the fever tick, it is well known that fever ticks are capable of surviving on deer and some exotic ungulates. The ticks adapt accordingly when their preferred host is removed from the pasture.^{4,5,6} Consequently, protocols have been developed for treating deer and exotic hoof-stock on infested pastures, including feeding ivermectin-treated corn and placing four-poster feeders designed to apply pesticides to targeted locations on the body of the deer as they feed.

Current Situation

Although regular fever-tick outbreaks are expected in the quarantine zone and occasionally reach the free zone, the number of outbreaks occurring in both zones has risen recently. Figure 1 depicts the number of infestations recorded by year (from 1960 through June 5, 2005) in the quarantine zone, the free zone, and the zones combined. At this time, there are more infestations in the quarantine zone than ever recorded. The number of infestations in the free zone is growing concurrently, and 2005 is not yet complete. The current report from the Fever Tick Eradication Program for May 2005 notes that 108 premises are presently under an infested quarantine (79 premises in the quarantine zone and 29 premises in the free zone).⁷ The infested premises under quarantine cover a staggering total of approximately 76,000 acres. Additionally, there are 268 premises that are not infested but are under an adjacent and/or check premises quarantine, which requires regular inspections.⁷

There are multiple factors that could be contributing to the recent spike in the number of fever-tick infestations in the both the quarantine and the free zones. *Boophilus* ticks remain widespread in Mexico and an increase in outbreaks may be caused by a rise in ticks being transported across the Rio Grande River on wildlife, stray livestock, or illicitly moved livestock into the United States.⁸ Weather patterns and rainfall amounts favoring tick survival might also play a role. Additionally, the long standing practice of vacating infested pastures seems to have led to an apparent increase in the maintenance of ticks on wildlife in at least some infested pastures, as mentioned above. With approximately half the number of tick riders currently employed as were present during the early 1980s, a decreased work force in the face of an increased workload certainly makes a difference. Finally, there are other confounding and concerning factors such as the continued discovery of ticks from Mexico that are increasingly resistant to a variety of acaricides.⁸

Although the Cattle Fever Tick Eradication Program is one of the USDA's most long standing programs, it is clear that the need for vigilance in response to fever ticks remains high today. With the continued existence of fever ticks and babesiosis just across the border in Mexico, the protection of the U.S. cattle industry from a recurrence of bovine babesiosis depends upon our lines of defense, both at the ports and along the quarantine zone.

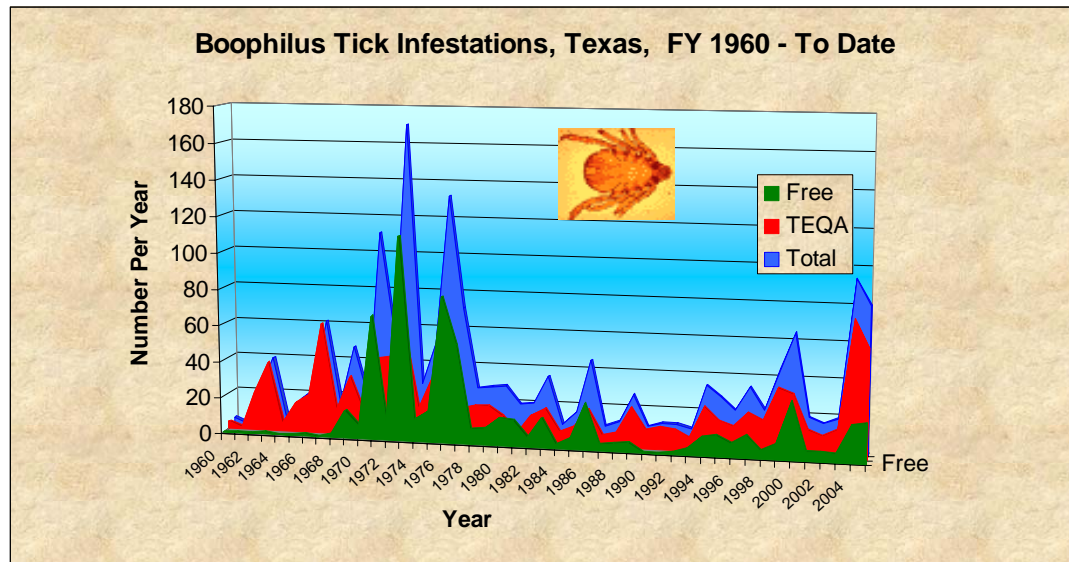


Figure 1. Number of *Boophilus* Tick Infestations in the Free Zone and the TEQA (Tick Eradication Quarantine Area) from 1960 to June 5, 2005. Provided by the USDA Cattle Fever Tick Eradication Program, Laredo, Texas.

Please contact Angela Pelzel at Angela.Pelzel@aphis.usda.gov with any questions or comments pertaining to the National Cattle Fever Tick Eradication Program.

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