

## Surveillance Requirements of Cattle Fever Tick Outbreak

By Roberta Duhaime

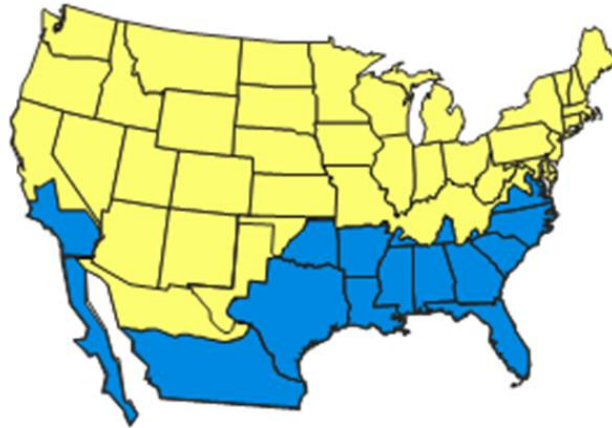
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**The cattle fever tick. Photo by Roberta Duhaime.**

Infestations of cattle fever tick, *Rhipicephalus (Boophilus) spp.*, in South Texas have significantly increased in recent years, from 19 recognized infested premises in fiscal year 2003 to 146 in fiscal year 2009. This increase is more than 750 percent over a 6-year time span. The last time the United States has seen this level of infestation was 36 years ago in 1973, when 170 infestations were reported. Since 1961, when the United States was last declared free of fever ticks, 1973 has been the only year when more infested premises were identified than the current year.

Figure 1 depicts the area where fever ticks were distributed in the environment (area in blue) prior to the initiation of the eradication program in 1906-1907. This shows the areas where cattle fever ticks can overwinter on the ground; however, fever ticks will also survive in colder climates when attached to a live animal.



**Figure 1. Map of former distribution of cattle fever ticks in the United States, 1906.**

The Cattle Fever Tick Eradication Program (CFTEP) has had a successful history since its inception in 1906. The government-employed mounted patrol inspectors (MPIs) provide the cornerstone of the surveillance program. The inspectors routinely perform patrols along horse trails beside the Rio Grande River, monitoring for signs of stray or smuggled livestock from Mexico that might carry fever ticks into the United States. When they discover stray or smuggled livestock, MPIs apprehend, inspect, treat, and quarantine the animals. All land that the animals have traversed is also quarantined.

Mounted patrol officers also “scratch”-inspect all livestock (cattle and horses) being moved by local ranchers outside the designated Permanent Quarantine “Buffer” Zone area along the Rio Grande. This involves manually feeling the skin of the animal from head to hoof for ticks, and ensuring that the animals are dipped or sprayed with an organophosphate tickicide solution containing the active ingredient coumaphos.



**'Scratching' cattle for fever ticks. Photo by Roberta Duhaime.**

The Permanent Quarantine "Buffer" Zone, also known as the Systematic Area (SA), serves as a buffer between Mexico, where fever ticks are endemic, and the rest of the fever tick-free United States, called the Free Area. The SA consists of over a half million acres, stretching from the Gulf of Mexico near Brownsville, Texas, to Amistad Dam north of Del Rio, Texas. When more and more infestations were identified in the Free Area in recent years, it became necessary to create additional buffer zones, called Temporary Preventative Quarantine Areas or Blankets. Maps in Figures 2 and 3 pinpoint the infestations in 2003 and in 2009; Figure 3 also shows the temporary preventative quarantine areas. The current Blanket Areas were initiated beginning in June 2007, with the most recent blanket (the smallest of the three shown on the map) instituted in July of 2009. These blankets now cover almost 1 million additional acres where routine surveillance is currently taking place. Therefore, the program's current routine surveillance area has tripled in size.

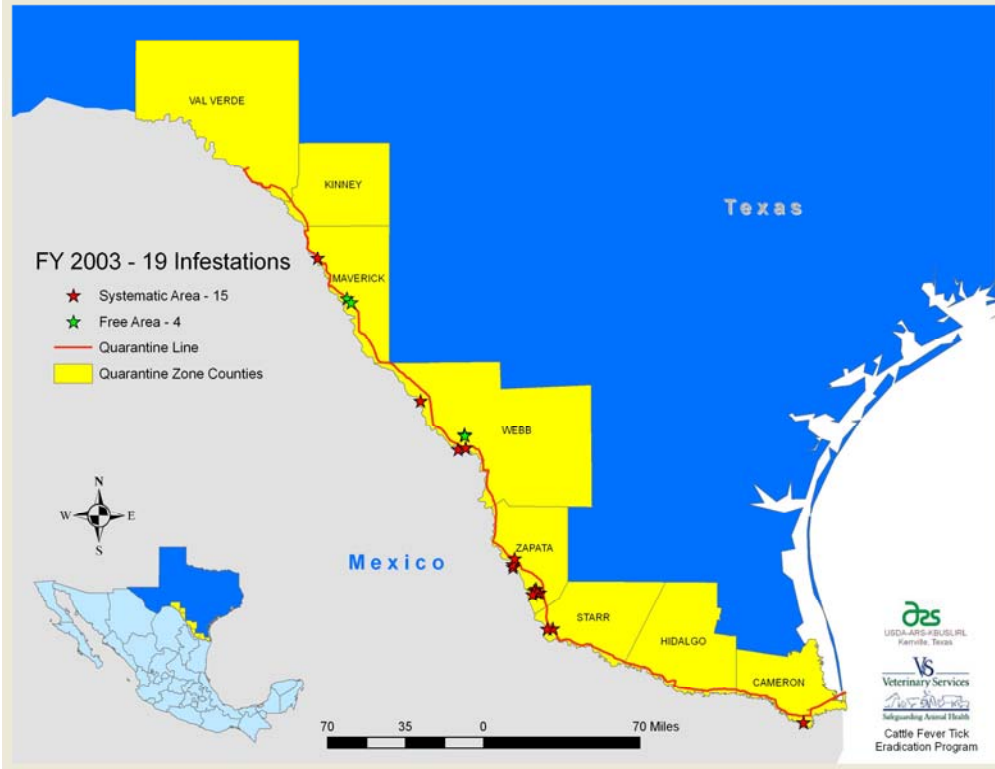


Figure 2. Map of cattle fever tick infestations, FY 2003

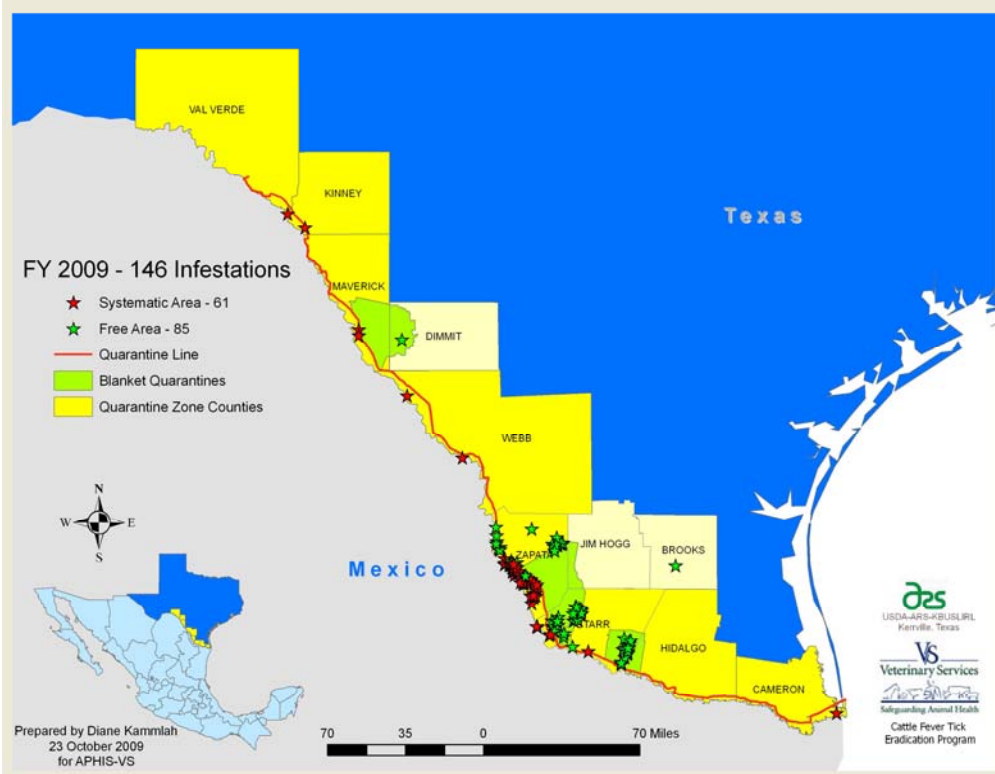


Figure 3. Map of cattle fever tick infestations, FY 2009; also shows temporary preventative quarantine areas

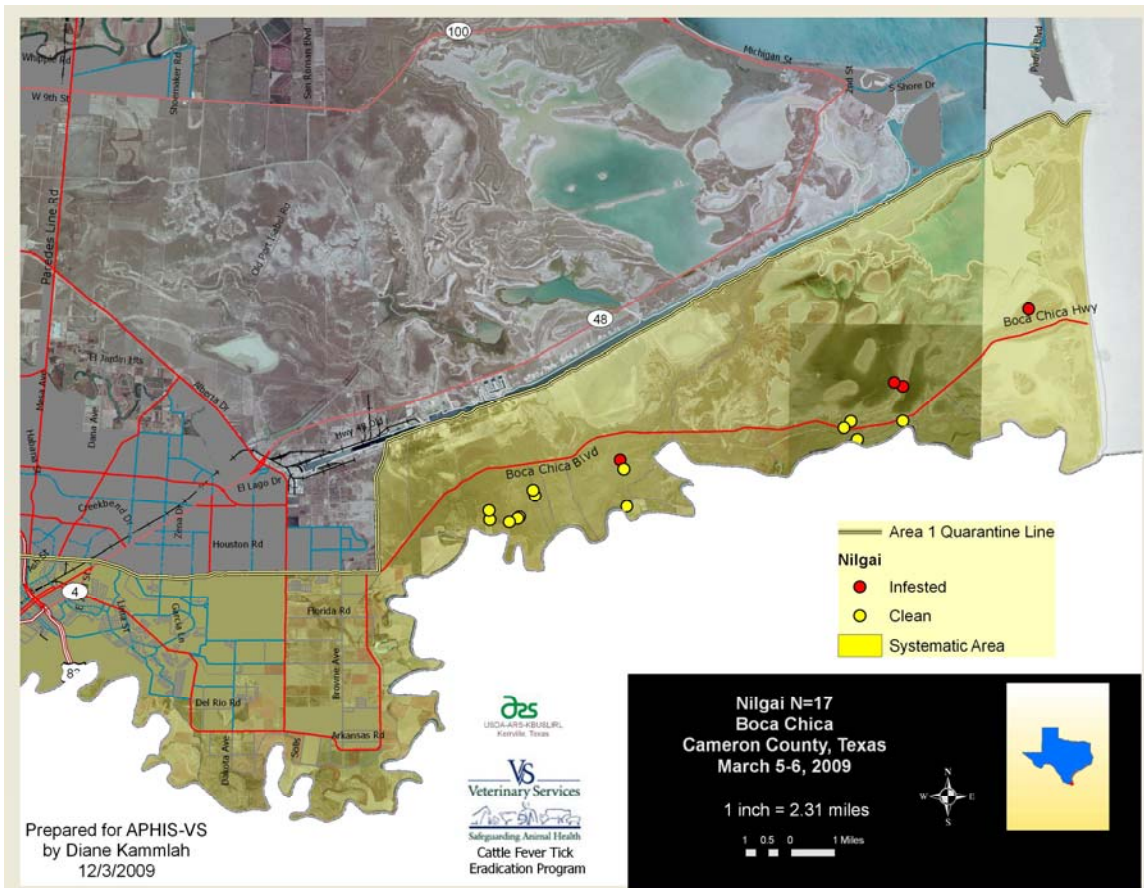
For the past 20 years or more, the program has employed approximately 60 MPIs at any given time. To cover these vast new areas and many other associated new duties, the "Tick Force" currently employs slightly more than 100 MPIs. Each MPI requires much equipment to function, including a vehicle, communication equipment, GPS unit, binoculars, hand lens, pesticide spray machine, handgun, and other safety equipment.

Many interlacing factors may have contributed to the current outbreak, but one factor that seems clear is the increase of white-tailed deer and corresponding decrease in cattle populations in the infested area. This, along with the interspersed additions of exotic hoof-stock in the area capable of carrying fever ticks, has demanded that the program evolve to include additional surveillance, which is critical to a successful eradication program.

Historically, hunter-killed surveillance was an important tool in identifying fever ticks on white-tailed deer and other exotic hoof-stock; however, this method is no longer adequate. In recent years, the program has begun to rely on white-tailed deer helicopter capture-release surveillance. This surveillance method has indicated the overall severity of the tick infestation problem occurring in the white-tailed deer population. For example, animals from a population of white-tailed deer were captured and released on a ranch in Starr County in 2005 and again in 2007. The deer in this area were determined to be 76 percent infested (19/25 head) with cattle fever ticks at the time of the first capture, and 82 percent infested (18/22 head) at the time of the second capture. This information was used to help gain support for further work with wildlife hosts.

In the past few years, increasing numbers of fever ticks have been identified on red deer, nilgai, axis deer, American bison, elk, fallow deer, and aoudad sheep as well as white-tailed deer. The CFTEP has been conducting nilgai population surveillance activities by use of helicopter harvest in the Boca Chica area of Cameron County since 2006 (see Figure 4). There are no barriers to inhibit nilgai movements into and out of Mexico by crossing the Rio Grande. Even though the 22 head harvested in 2006 and the 37 head harvested in 2007 were determined to be free of fever ticks, these animals were known to be a high risk for infestation. In 2007, a nilgai that had been privately hunted from the vicinity was found to be infested.

Subsequent surveillance conducted in March 2009 revealed that 24 percent (4/17 head) of those harvested were infested with cattle fever ticks. The latest harvest, in October 2009 with a much smaller sample size, showed 12.5 percent (1/8 head) to be infested. Surveillance inspection of cattle north of this area thus far has not revealed any spread of fever tick infestation outside of the permanent quarantine area. The risk remains that infested nilgai are capable of swimming the ship channel, the only geographic barrier between the infested nilgai herd and the rest of the Free Area of the United States, and transporting ticks up the Texas Gulf Coast and beyond. Expanded surveillance to examine nilgai that are publically hunted north of the ship channel has recently been approved and begun.



**Figure 4. Map of infested nilgai, March 2009, Boca Chica area, Cameron County**

Further enhancements are needed for adequate surveillance for the CFTEP. In addition to conducting assessments to determine specific needs for increased equipment, supplies, and personnel, there are increased data collection and analysis requirements.

Also, possible additional office and administrative support is needed to accommodate the ever-growing workload increase related to both surveillance and eradication of fever tick infestations in livestock. In addition, there are new and increased needs relating to the wildlife issue, such as helicopter hire, trail cameras, 4-wheelers, 2-poster wildlife bait stations, and possibly additional personnel.

Increased surveillance and eradication work has also necessitated enhanced or newly formed relationships with working partners such as the U.S. Fish and Wildlife Service, APHIS Plant Protection and Quarantine, Texas Parks and Wildlife Department, USDA Natural Resources Conservation Service, USDA Agricultural Research Service, Caesar Kleberg Wildlife Research Institute, Texas A&M University, and others. The overall program is run under a partnership between USDA and the Texas Animal Health Commission.

The dedicated employees of the CFTEP are maintaining vigilance in surveillance and eradication efforts. The focus is on preventing the spread to other areas of the United States without a living memory of the scourge of fever ticks, while the need for financial and technical assistance to meet this challenging task continues to grow.

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