



Frank Bryant, Jr. MD, FFAFP
Chairman
Texas Board of Health

Robert Bernstein, MD, FACP
Commissioner

Surveillance of Arthropod-Borne
Diseases -- Texas, 1987

Bureau of Disease Control and Epidemiology,
1100 West 49th Street, Austin, Texas 78756 (512-458-7455)

TEXAS STATE
DOCUMENTS COLLECTION

TxD

600-6 P928 88/8/20

SURVEILLANCE OF ARTHROPOD-BORNE DISEASES -- TEXAS, 1987

Arthropods play a significant role as vectors of many pathogenic microorganisms. Each year, a number of arthropod-borne diseases are reported in Texas. These diseases include murine typhus, tularemia, Lyme disease, mosquito-borne encephalitis, and Rocky Mountain spotted fever (RMSF).

Murine typhus is caused by *Rickettsia typhi*. It is transmitted to man by the inoculation of infected feces from a rat flea, *Xenopsylla cheopis*, which defecates on the human host during the feeding process. Scratching associated with the flea bite facilitates the inoculation of infected feces into the bite site or skin abrasions. In 1987, a total of 34 cases of murine typhus were reported in Texas. All cases were confirmed serologically by the indirect fluorescent antibody test. None of the patients died. Figure 1 shows the geographic distribution of the cases. Counties in South Texas -- particularly Nueces, Hidalgo, and Cameron counties -- are the major endemic foci of murine typhus in Texas.

Transmission of the bacterium, *Francisella tularensis*, the causative agent of tularemia, can be accomplished in many ways. Arthropod transmission generally is associated with ixodid ticks or deer flies or with their infectious feces. However, infections can develop from handling and, especially, skinning infected animals. Rabbits are involved more often than rodents. Five cases of tularemia were reported during 1987 (Figure 2). This is the fewest number of cases reported in Texas in at least 40 years. Four cases were confirmed serologically, and one had *F. tularensis* cultured from an ulcerated lesion. All five cases recovered.

Lyme disease is caused by a spirochete, *Borrelia burgdorferi*. The spirochete is transmitted to humans by the bite of an infected tick or possibly by other arthropods such as fleas, biting flies, and mosquitoes. In 1987, a total of 102 possible Lyme disease cases was reported; 33 patients met the definition for a confirmed case. A case of Lyme disease is considered confirmed if 1) erythema migrans (EM) is present or 2) in the absence of EM, the patient exhibits cardiac, neurologic, or arthritic manifestations and an indirect fluorescent antibody titer for *B. burgdorferi* \geq 1:256 or isolation of *B. burgdorferi* from a clinical specimen. Although the majority of cases reside in North-Central Texas, sporadic cases have been identified throughout the state (Figure 3).

A number of arthropod-borne viral (arboviral) diseases affect the central nervous system, causing an encephalitis, or inflammation of the brain. These diseases normally are transmitted from bird to bird, and less commonly from bird to man or his domesticated animals, by a number of species of mosquitoes. During 1987, 91,908 mosquito specimens, representing 44 species, were received by the TDH Bureau of Laboratories for viral isolation studies. These specimens were collected from 44 counties by personnel in local city and county health departments, mosquito control districts, and zoonosis control programs in public health regions. Figure 4 shows the distribution of positive viral isolates from mosquitoes.

Arboviral activity was also reported in bird sera submitted by Dallas and Lubbock counties. Demonstration of antibodies to St. Louis encephalitis (SLE) and western equine encephalitis (WEE) viruses was reported in bird sera collected in Dallas county. SLE, WEE, eastern equine encephalitis (EEE), and Venezuelan equine encephalitis (VEE) activity was reported in chicken sera collected in Lubbock County.

88-158 OCT 17 1988

The distribution of human arboviral encephalitis cases during 1987 is presented in Figure 5. Midland and Harris counties each reported one case of WEE. Lubbock, Lynn, Crane, Glascock, and Comanche counties each reported one case of SLE. No deaths were reported.

Rocky Mountain spotted fever is a febrile disease caused by *Rickettsia rickettsii*. RMSF is transmitted through the bite of an infected tick or by contamination of the skin with the crushed tissues or feces of an infected tick. During 1987, general surveillance tick specimens were submitted from 69 counties by zoonosis control personnel, local health departments, military personnel, and veterinarians. Twenty-three (33%) of the 69 counties reported ticks positive for spotted fever group (Figure 6). The brown dog tick, *Rhipicephalus sanguineus*, accounted for 38% of the positives; the black-legged deer tick, *Ixodes scapularis*, 35%; the lone star tick, *Amblyomma americanum*, 24%; and the American dog tick, *Dermacentor variabilis*, 3%. Overall, 66 (2.4%) out of 2,670 ticks submitted were spotted fever group positive.

Ticks collected from humans were submitted by 32 counties, 11 of which submitted ticks found to be positive for spotted fever group. Thirty-six (6.5%) of the 548 ticks collected from humans were positive. Thirty (85%) of the 36 positive ticks were *Amblyomma americanum*; six were *Ixodes scapularis*. Figure 7 combines the distribution of RMSF human cases and counties in which positive ticks were reported. During 1987, 22 cases of spotted fever were reported from 17 counties. A majority of the cases resided in North-Central and East Texas. This area is the endemic focus of spotted fever in Texas. Reported deaths included a 3-year-old girl from Archer County and a 3-month-old boy from Jasper County. Most of the counties with spotted fever cases had positive ticks reported within the county or in adjacent counties.

Prepared by: Glenna Teltow, MS, M(ASCP), Chief, Medical Entomology Section, Parasitology/Entomology Branch, Bureau of Laboratories, Texas Department of Health.

FIGURE 1. MURINE TYPHUS DURING 1987
DISTRIBUTION OF REPORTED HUMAN CASES
BY COUNTY OF RESIDENCE

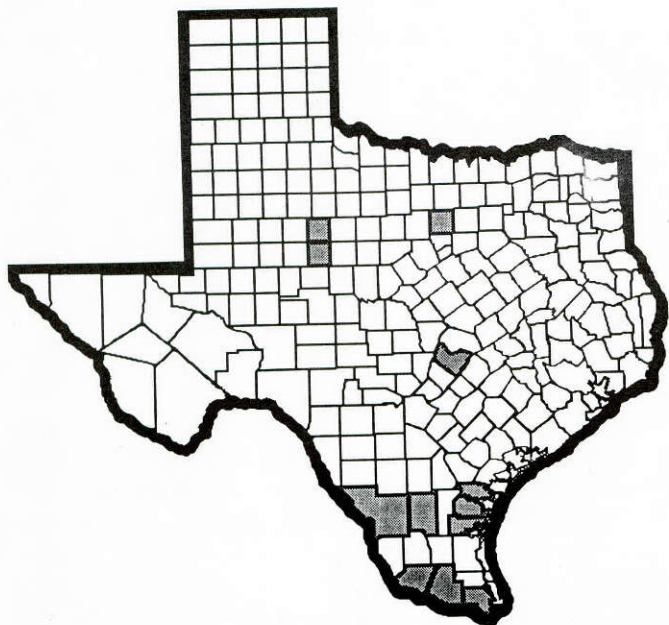


FIGURE 2. TULAREMIA DURING 1987
DISTRIBUTION OF REPORTED HUMAN CASES
BY COUNTY OF RESIDENCE

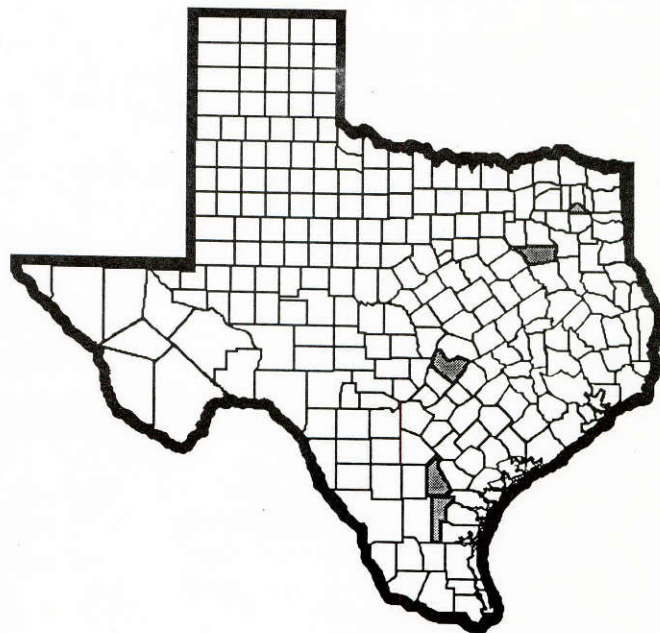


FIGURE 3. CONFIRMED HUMAN CASES OF LYME DISEASE IN TEXAS-1987

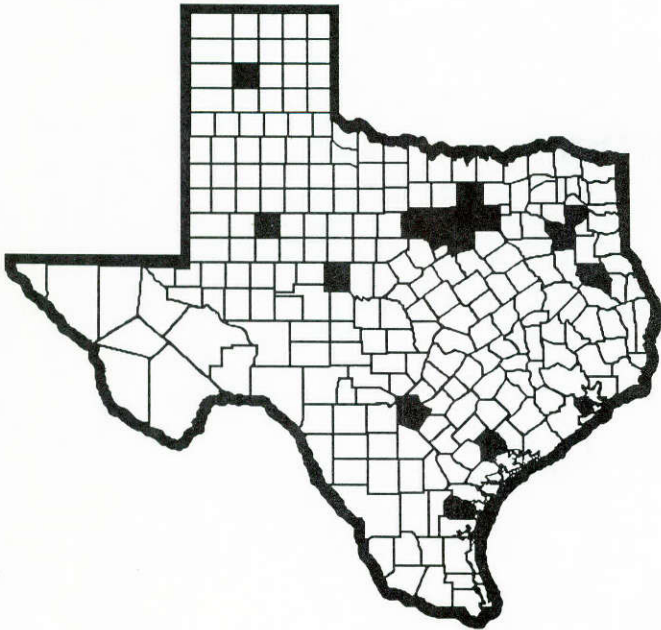


FIGURE 4. MOSQUITO-BORNE ENCEPHALITIS SURVEILLANCE PROGRAM 1987 COUNTIES IN WHICH THERE WERE POSITIVE ISOLATIONS

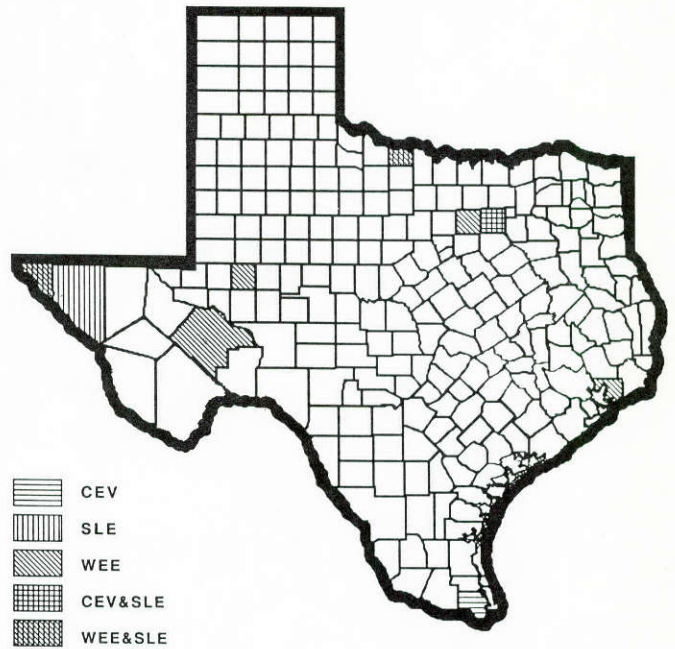


FIGURE 5. ARBOVIRAL ENCEPHALITIS CASES 1987 COUNTIES OF RESIDENCE OF HUMAN CASES DURING 1987

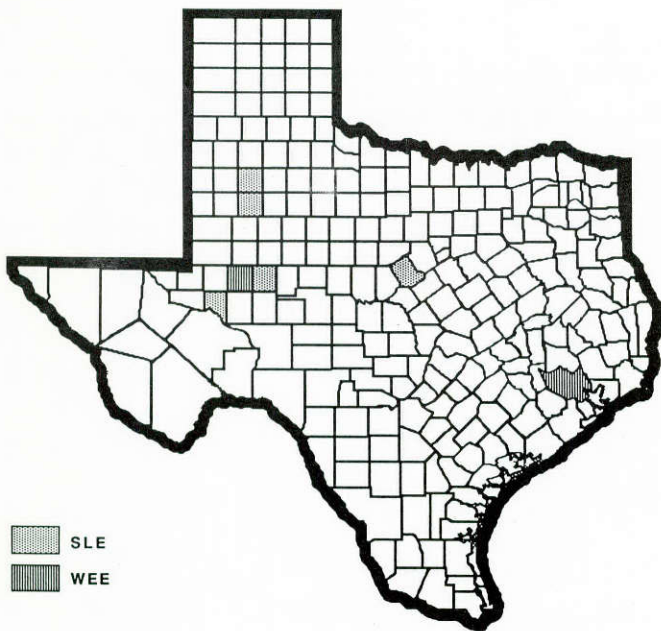


FIGURE 6. TICK-BORNE RICKETTSIAL DISEASES SURVEILLANCE COUNTIES FROM WHICH TICK SPECIMENS WERE SUBMITTED DURING 1987

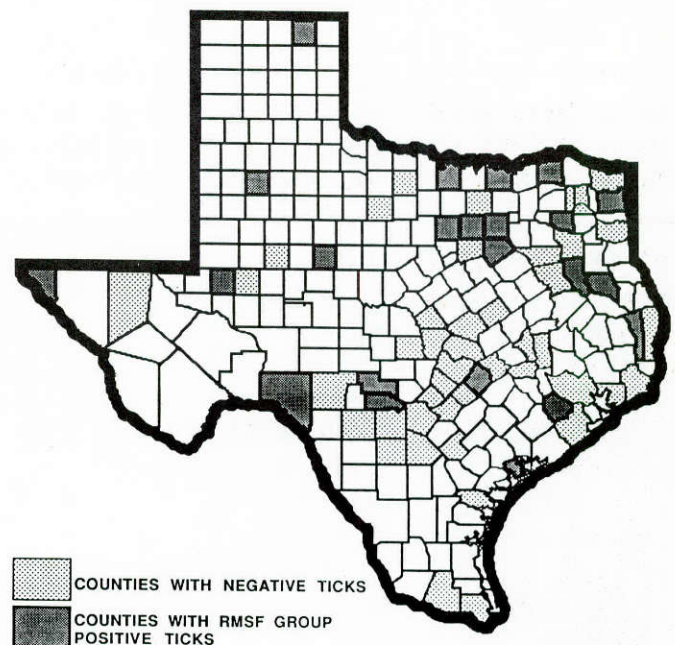
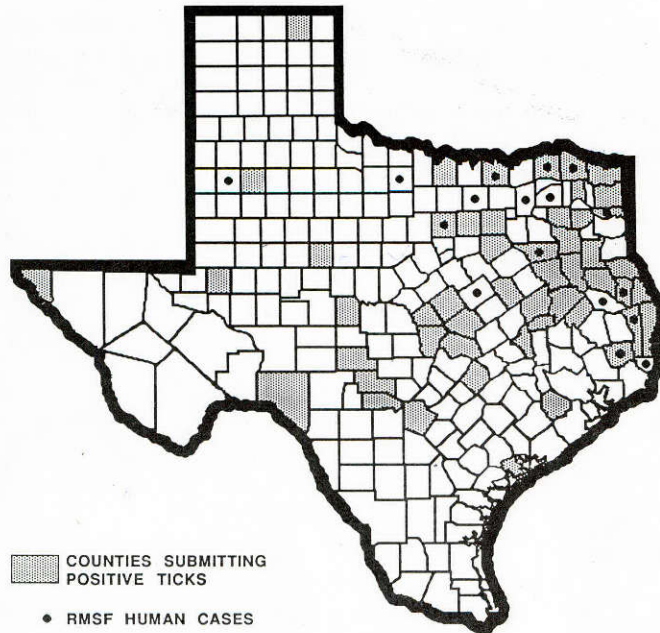


FIGURE 7. RMSF DURING 1987
DISTRIBUTION OF REPORTED HUMAN CASES
BY COUNTY OF RESIDENCE



TEXAS PREVENTABLE DISEASE NEWS (ISSN 8750-9474) is a free, weekly publication of the Texas Department of Health, 1100 West 49th Street, Austin, TX 78756. Second-class postage paid at Austin, TX. POSTMASTER: Send address changes to TEXAS PREVENTABLE DISEASE NEWS, 1100 West 49th Street, Austin, TX 78756.

TEXAS PREVENTABLE DISEASE NEWS
 Texas Department of Health
 1100 West 49th Street
 Austin, TX 78756

**SECOND CLASS POSTAGE
 PAID AT AUSTIN, TX**

RETURN POSTAGE GUARANTEED



EAT RIGHT