



Texas Department of Health
 Zoonosis Control Division
 1100 West 49th Street
 Austin, Texas 78756

2001 PLAGUE SURVEILLANCE REPORT
(REVISED 10-10-14)

Each year Texas Department of Health (TDH) Zoonosis Control personnel, in cooperation with Texas Wildlife Damage Management Service, Texas Parks and Wildlife Department, and other agencies, collect blood samples from Texas wildlife. Samples are collected from animals, primarily carnivores, using Nobuto blood filter strips. Although most carnivores are resistant to plague, they develop antibodies when exposed to the plague organism (*Yersinia pestis*), thereby making them good indicators of local plague activity.

Surveillance for plague activity is important because the organism can cause severe human disease and death and occurs naturally in much of Texas. Early detection of increased plague activity enables TDH to alert physicians and veterinarians to be vigilant for signs of the disease. *Yersinia pestis* is also an organism that can be used as a bioterrorism weapon. Unusual disease activity related to its use as a weapon can be recognized more easily if usual disease occurrence and risk is well known.

Although the last reported human case of plague in Texas occurred in 1993, surveillance results indicate there are still natural reservoirs for the organism in much of the state.

The Texas Department of Health Bureau of Laboratories, Microbiology Services Division, Serology Branch tested 2,652 blood samples collected from animals in 107 counties during calendar year 2001. Plague antibodies were found in 5 (0.19%) samples at a titer of 1:32 or greater which indicates probable exposure to plague (Table 1).

| County | Titer | Species | | | | | Total Animals |
|--------|-------|---------|-------|--------|-----------|------------|---------------|
| | | Opossum | Skunk | Coyote | Feral Pig | Jackrabbit | |
| Borden | 1:128 | | | | | 1 | 1 |
| Nueces | 1:256 | 1 | | | | | 1 |
| Nueces | 1:128 | | 1 | | | | 1 |
| Potter | 1:64 | | | 1 | | | 1 |
| Uvalde | 1:64 | | | | 1 | | 1 |
| Total | | 1 | 1 | 1 | 1 | 1 | 5 |

Table 1. Samples with a Plague Titer of 1:32 or Greater, 2001

Plague Surveillance in Texas, 2001

The geographic distribution of positive samples and samples collected is illustrated in Figure 1.

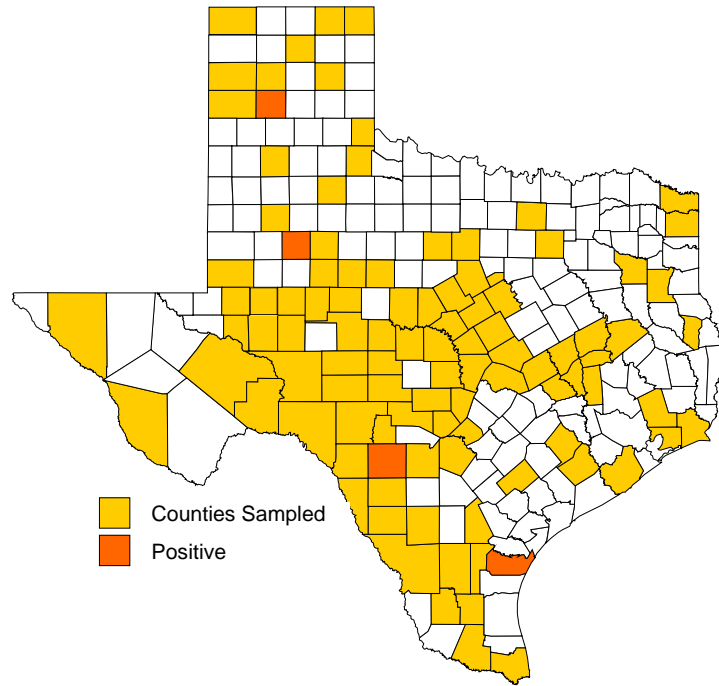


Figure 1. Texas Counties Sampled for Plague, 2001

Comparing the percent of surveillance samples positive for plague during 2001 to the percent positive in previous years indicates a period of low plague activity in Texas (Figure 2). Factors such as climate, changing ecosystems, predator activity, and host populations may all affect the potential for plague transmission within wildlife populations.

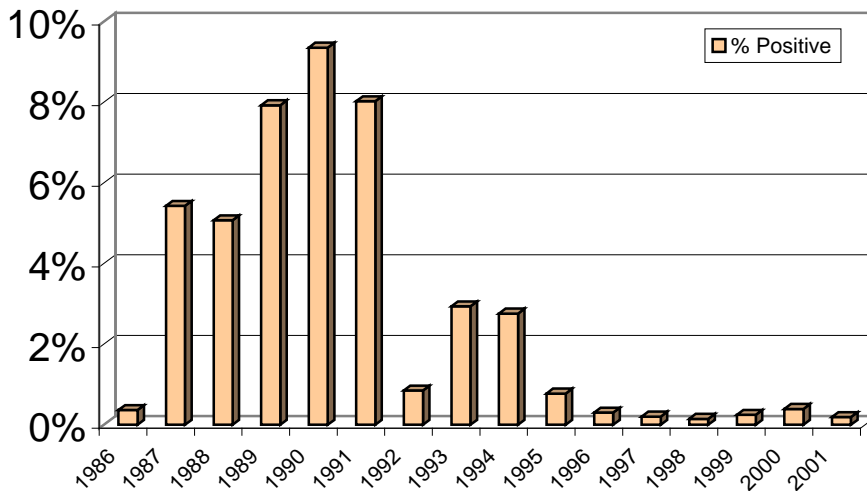
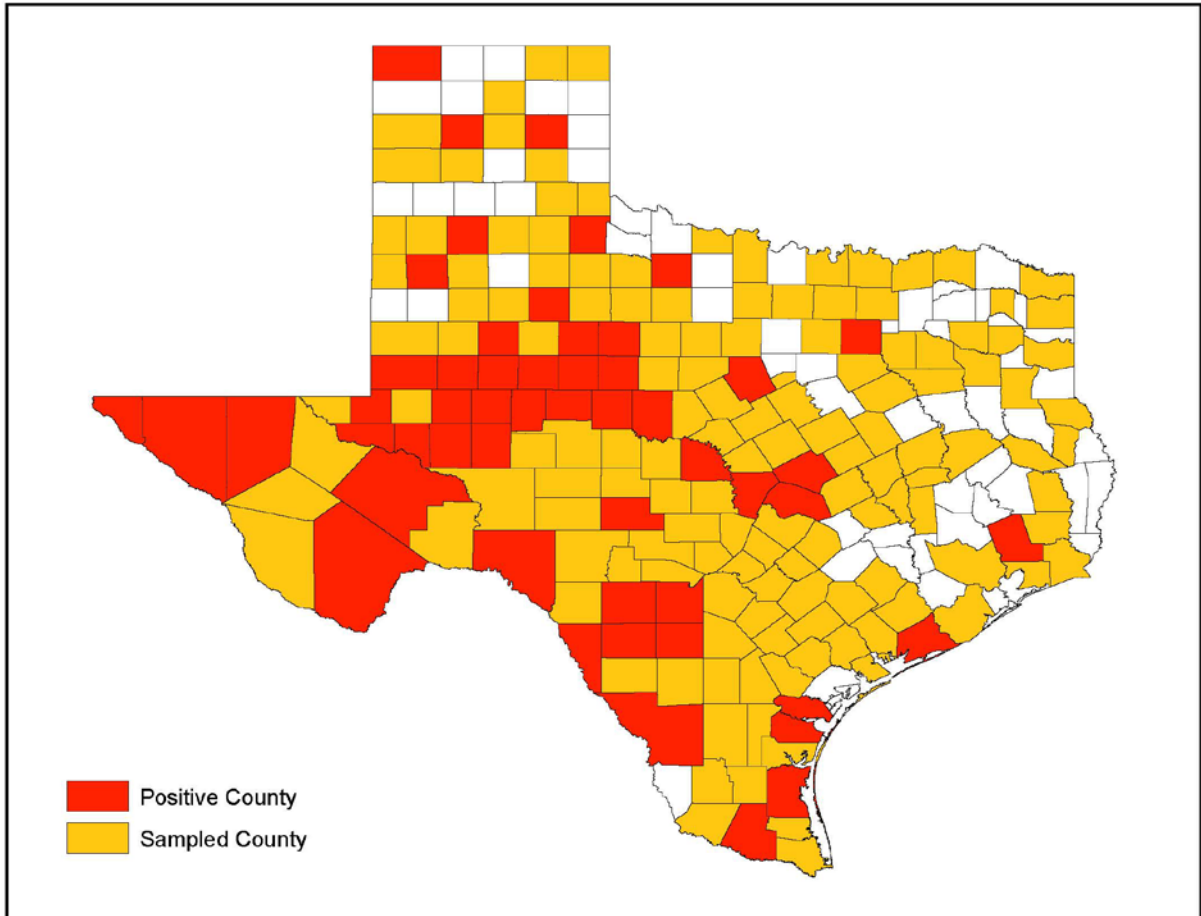


Figure 2. Percent of Surveillance Samples Positive for Plague, 1986-2001

Plague Surveillance in Texas, 2001

The historic distribution of plague surveillance in Texas is shown in Figure 3. While plague is considered endemic in far west Texas, the surveillance results demonstrate that there may be naturally occurring risk in all but the extreme eastern part of the state.

Figure 3. Counties Sampled and Counties Positive for Plague, 1976-2001



By using educational materials, news releases, a public access website, and conference presentations, TDH personnel keep veterinarians, physicians, and the general public aware of the plague risk in Texas. Even in areas with historically low plague activity, infections may occur in hunters or campers who visit plague areas or in pets and wildlife transported from those areas. There is also a risk that new areas of infection may be established by moving animals across the state.

In the spring of 2001 a special investigation was initiated after the TDH Public Health Region 1 Zoonosis Control Division (ZCD) veterinarian was notified that the prairie dog colony in the Sanford-Yake picnic area in the Lake Meredith National Recreation Area (LMNRA) had died out. The LMNRA covers more than 46,000 acres in the Texas Panhandle and averages about 1.5 million visitors annually. As part of the investigation the prairie dog burrows in the picnic ground were checked for fleas. Numerous burrows contained the remains of dyed eggshells and plastic eggs, indicating the potential for

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human exposure to fleas from the holes. A shipment of 150 fleas was made to the Centers for Disease Control and Prevention CDC plague laboratory in Fort Collins, Colorado, where *Y. pestis* deoxyribonucleic acid (DNA) was detected with polymerase chain reaction (PCR) testing.

The picnic area was barricaded, and a lake cleanup project that was scheduled for the next weekend was cancelled. To eliminate public concern and to be able to reopen the picnic ground, the LMNRA superintendent contracted for the application of insecticidal dust into the prairie dog holes. After follow-up sampling did not detect any fleas, the picnic area was reopened. Additional flea and rodent samples were collected from prairie dog colonies near the park and in the nearby town of Borger and were submitted to the CDC laboratory. No evidence of plague was found in any of those specimens.

Table 2 shows the complete County listing, by species, of samples that tested negative at a titer of less than 1:32.

Plague Surveillance in Texas, 2001

| Table 2. Negative Plague Samples by County and Species, 2001 | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------|-------------------------|--------------------------|--------|-----|--------|-----|----------------------|-----------|----------|---------------|-----------------------|-----------|---------|---------|----------|----------|-------------------------|---------------|--------------|------------------|-------------------|---------|
| County | Badger | Black-tailed Jackrabbit | Black-tailed Prairie Dog | Bobcat | Cat | Coyote | Dog | Eastern Fox Squirrel | Feral Pig | Gray Fox | Mountain Lion | Nine-banded Armadillo | Porcupine | Raccoon | Red Fox | Ringtail | Roof Rat | Southern Plains Woodrat | Striped Skunk | Swamp Rabbit | Virginia Opossum | White-tailed Deer | Unknown |
| Andrews | | | | | | | 12 | | | | | | | | | | | | | | | | |
| Bell | | | | | | | 41 | | | | | | | | | | | | | | | | |
| Bexar | | | | | | | 4 | | | 4 | | | | | 17 | | 1 | | | 27 | | 17 | |
| Blanco | | | | | | | 1 | | | | 3 | | | | 3 | | | | | | | | |
| Borden | | | 7 | 1 | 18 | | 66 | | | 3 | 3 | | | | 5 | | | 1 | | 2 | | | 1 |
| Bosque | | | | | | | 13 | | | 1 | | | | | | | | | | | | | |
| Bowie | | | | | 1 | | 5 | | | | | | | | | | | | | | | | |
| Brazoria | | | | | | | 3 | | | | | | | | 1 | | | | | | | | |
| Brazos | | | | | | | 7 | | | | | | | | 11 | | | | | 2 | | | |
| Brooks | 2 | | | | 1 | | 19 | 1 | | 4 | | | 1 | | 5 | | | | | 1 | | 10 | |
| Brown | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Burleson | | | | | | | 2 | | | | | | | | | | | | | 2 | | | |
| Burnet | | | | | | | 3 | | | | 9 | | | | 8 | | | | | | | | |
| Cameron | | | | | 3 | | 10 | | | 1 | | | | | 1 | | | | | | | 1 | |
| Cass | | | | | | | 1 | | | | | | | | | | | | | | | | |
| Chambers | | | | | 2 | | 29 | | | | | | | | | | | | | | | | |
| Childress | | | | | | | 6 | | | | | | | | | | | | | | | | |
| Coke | | | | | 1 | | 3 | | | | 3 | | | | | 1 | | | | | | | |
| Coleman | | | | | 2 | | 4 | | | | | | | | | | | | | | | | |
| Colorado | | | | | 2 | 1 | 11 | | | | | | | | 12 | | | | | | | 7 | |
| Comal | | | | | | | 21 | | | | 2 | | | | | | | | | | | | |
| Comanche | | | | | | | 2 | | | | | | | | | | | | | | | | |
| Concho | | | | | | | 3 | | | | | | | | | | | | | | | | |
| Coryell | | | | | | | 23 | | | 3 | 1 | | | | 1 | | | | | | | | |
| Cottle | | | | | | | 4 | | | | | | | | | | | | | | | | |
| Crane | | | | | 1 | | 42 | | | | | | | | | | | | | | | | |
| Crockett | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Dallam | | | | | | | 7 | | | | | | | | | | | | | | | | |
| Dallas | | | | | | 1 | | | | | 2 | | | | 65 | | | | | | | | |
| De Witt | | | | | | | 5 | | | | | | | | | | | | | | | | |
| Deaf Smith | 1 | | | | | 1 | 3 | | | | | | | | | | | | | | | | |
| Denton | | | | | | | | | | | | | | | 41 | | | | | | | | |
| Dickens | | | | | | | 1 | | | 2 | | | | | | | | | | | | | |
| Dimmit | | | | | | | 6 | | | | | | | | | | | | | | | | |
| Duval | 1 | | | | | | 8 | | | | | | | | | | | | | | | | |
| Ector | | | | | | | 2 | | | | | | | | | | | | | | | | |
| Edwards | | | | | 14 | | 7 | | | 30 | 16 | | | | 86 | 1 | | | 20 | | | | |
| Erath | 1 | | | | 2 | | 5 | | | | 8 | | | | 1 | | | | | | | | |
| Gillespie | | | | | | | 1 | | | | 4 | | | | 4 | | | | | | | | |
| Glasscock | | | | | 1 | 2 | 32 | | | | 9 | | | | 7 | 11 | | | | | 1 | | |
| Gray | | | | | | | 28 | | | | | | | | | | | | | | | | |
| Grimes | | | | | | | 4 | | | | | | | | | | | | | | | | |
| Hale | 1 | | | | | | 1 | | | | | | | | | | | | | | | | |

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|--|--------|-------------------------|--------------------------|--------|-----|--------|-----|----------------------|-----------|----------|---------------|-----------------------|-----------|---------|---------|----------|----------|-------------------------|---------------|--------------|------------------|-------------------|---------|
| County | Badger | Black-tailed Jackrabbit | Black-tailed Prairie Dog | Bobcat | Cat | Coyote | Dog | Eastern Fox Squirrel | Feral Pig | Gray Fox | Mountain Lion | Nine-banded Armadillo | Porcupine | Raccoon | Red Fox | Ringtail | Roof Rat | Southern Plains Woodrat | Striped Skunk | Swamp Rabbit | Virginia Opossum | White-tailed Deer | Unknown |
| Hamilton | | | | | | 4 | | | | 1 | 4 | | | | 2 | | | | | | | | |
| Hidalgo | | | | 3 | | 50 | | | | | 1 | | | | | | | | | 1 | | 1 | |
| Houston | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Howard | | | | 1 | | 3 | | | | | | | | | | | | | | | | | |
| Hudspeth | | | | | | | | | | | | | | | | | | | 2 | | | | |
| Hutchinson | | | | | | 8 | | 1 | | | | | | | | | | | | | | | |
| Jefferson | | | | | | 133 | | | | | | | | 22 | | | | | | | | 1 | |
| Jim Hogg | | | | | 1 | 9 | | | | 7 | | | | 1 | | | | | | | | | |
| Jim Wells | | | | 7 | | 9 | | | | | | | | | | | | | | | | | |
| Kendall | | | | | | | | | | | 6 | | | 3 | | | | | | | | | |
| Kerr | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Kimble | | | | | | 7 | | | | 2 | | | | | | 1 | | | | | | | |
| Kinney | | | | 7 | 1 | 30 | | | | 21 | 2 | | | 23 | | | | | | 2 | | 4 | 3 |
| La Salle | | | | | | 9 | | | | | | | | | | | | | | | | | |
| Lampasas | | | | | | 2 | | | | | 4 | | | 1 | | | | | | | | | |
| Leon | | | | | | 7 | | | | 21 | | | | | | | | | | | | | |
| Liberty | | | | | | 2 | | | | 2 | 1 | | | | | | | | | | | | 1 |
| Lipscomb | | | | | | 1 | | | | | | | | | | | | | | | | | |
| Live Oak | | | | | | | | | | | 1 | | | | | | | | | | | | |
| Llano | | | | | | | | | | | 11 | | | 4 | | | | | | | | | |
| Lynn | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Madison | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Maverick | | | | | | 2 | | | | 14 | | | | | | | | | | | | | |
| McCulloch | | | | | | 17 | | | | | | | | | | | | | | | | | |
| Medina | | | | | | 3 | | | | | | | | 1 | | | | | | | | | |
| Menard | | | | 4 | | 8 | | | | | 1 | | | | | | | | | | | | |
| Midland | | | | 2 | | 23 | | | | | | | | | | | | | | | | | |
| Milam | | | | | | 1 | | | | | | | | | | | | | | | | | |
| Mills | | | | | | 2 | | | | | 1 | | | | | | | | | | | | |
| Mitchell | | | | | | 18 | | | | | | | | | | | | | | | | | |
| Motley | | | | | | 20 | | | | 8 | | | | 3 | | | | | | | | | |
| Nolan | | | | 1 | | 12 | | | | | | | | | | | | | | | | | |
| Nueces | | | | | | 1 | | | | | | | | 3 | | | | | | 9 | | 9 | |
| Ochiltree | | | | | | 1 | | | | | | | | | | | | | | | | | |
| Oldham | | | | | | | | | | | | | | 8 | | | | | | | | | |
| Palo Pinto | | | | | | 4 | | | | | | | | | | | | | | | | | |
| Pecos | 4 | | | 34 | | 51 | | | | | 10 | | 3 | 27 | 2 | | | | | 6 | | | |
| Potter | | | | | | 4 | | | | | | | | 1 | | | | | | | | | |
| Presidio | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Randall | | | | | | 9 | | | | | | | | | | | | | | | | | 1 |
| Reagan | | | | | | | | | | | | | | 1 | | | | | | | | | |
| Real | | | | | 5 | 3 | | | | 43 | 5 | | | 4 | | | | | | | | | |
| Robertson | | | | | | 2 | | | | | | | | | | | | | | | | | |
| Rusk | | | | 2 | | | | | | | | | | 2 | | | | | | | | | |

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| County | Badger | Black-tailed Jackrabbit | Black-tailed Prairie Dog | Bobcat | Cat | Coyote | Dog | Eastern Fox Squirrel | Feral Pig | Gray Fox | Mountain Lion | Nine-banded Armadillo | Porcupine | Raccoon | Red Fox | Ringtail | Roof Rat | Southern Plains Woodrat | Striped Skunk | Swamp Rabbit | Virginia Opossum | White-tailed Deer | Unknown | | |
|---------------|--------|-------------------------|--------------------------|--------|-----|--------|-----|----------------------|-----------|----------|---------------|-----------------------|-----------|---------|---------|----------|----------|-------------------------|---------------|--------------|------------------|-------------------|---------|---|--|
| San Augustine | | | | | | | 1 | | | | | | | | | | | | | | | | | | |
| San Saba | | | | 1 | | | 4 | | | | 17 | | | | 6 | 1 | 1 | | | | | | | | |
| Schleicher | | | | | | | | | | | | | | | 1 | | | | | | | | | | |
| Scurry | | | | | | | | | | | | | | | | | | | | | | | | | |
| Smith | | | | | | | | | | | 1 | | | | 5 | | | | | | | | | | |
| Somervell | | | | | | | | | | | | | | | | | | | | | | | | | |
| Stephens | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sterling | | | | | 1 | | 3 | | | | 2 | | | | 2 | 2 | | | | | | | | | |
| Sutton | | | | | 2 | | 1 | | | | 1 | | | | | | | | | | | | | | |
| Taylor | | | | | | | | | | | | | | | | | | | | | | | | | |
| Terrell | | | 1 | | 19 | | 3 | | | | 10 | 1 | | | 10 | | | | | | | | | | |
| Tom Green | | | | | 10 | | | | | | 5 | | | | 2 | 2 | | | | | | | | | |
| Upton | | | | | 4 | | 9 | | | | | | | | | | | | | | | | | | |
| Uvalde | | | | | 14 | | 20 | | | | 11 | | | | 20 | 4 | | | | | | | | | |
| Val Verde | | 2 | | | 114 | 1 | 15 | | | 5 | 62 | 3 | | | 116 | | 1 | | | | 1 | | 3 | 1 | |
| Victoria | | | | | | | 9 | | | | 3 | | | | 5 | | | | | | | | 1 | | |
| Webb | | | | | | | 81 | | | | 2 | | | | | | | | | | | | | | |
| Wharton | | | | | | | 2 | | | | | | | | | | | | | | | | | | |
| Williamson | | | | | | | 2 | | | | | | | | | | | | | | | | | | |
| Zavala | | | | | | | 15 | | | | | | | | 1 | | | | | | | | | | |
| Unknown | | | | | | | 1 | | | | | | | | | | | | | | | | | | |