

2013 TEXAS PLAGUE SURVEILLANCE REPORT (Revised 10-08-15)

Each year the Texas Department of State Health Services (DSHS), in conjunction with Texas AgriLife Extension/Wildlife Services, Texas Parks and Wildlife Department, and other agencies, collects samples from wildlife for plague (the bacterium *Yersinia pestis*) testing. Samples are collected primarily from carnivores using Nobuto blood filter strips in the course of predator control actions or as part of targeted surveillance efforts for plague and other zoonotic diseases. Although most carnivores are resistant to plague, they develop antibodies when exposed to *Y. pestis*, thereby making them good indicators of plague activity within their territories. Animal and arthropod surveillance results indicate that there are natural reservoirs for the plague organism in much of the state.

Plague, which occurs naturally in Texas, can cause severe human disease and death and clinically or laboratory-confirmed cases in animals or humans are reportable to DSHS. Surveillance for plague enables DSHS to alert physicians and veterinarians to be vigilant for signs of the disease in their patients when increased plague activity is detected in wildlife. *Y. pestis* is also an organism that can be used as a bioterrorism weapon. Unusual plague activity related to its use as a weapon can be recognized more easily if natural disease occurrence is well known.

Plague in Humans

There were no reported human cases of plague in Texas during 2013.

Plague in Animals

The DSHS Laboratory Services Section received submissions from 1,809 animals collected during calendar year 2013 from 122 counties, of which 1,753 from 118 counties were tested; 56 submissions were not tested due to specimen damage, insufficient specimen quantity, or missing specimen. Plague antibodies at a titer of $\geq 1:32$, which indicates probable exposure to *Y. pestis*, were reported for 23 samples (1.3% of all samples tested) collected from 11 counties (Table 1); 1,730 samples (98.7% of samples tested) were negative at a titer of $<1:32$ (Table 2).

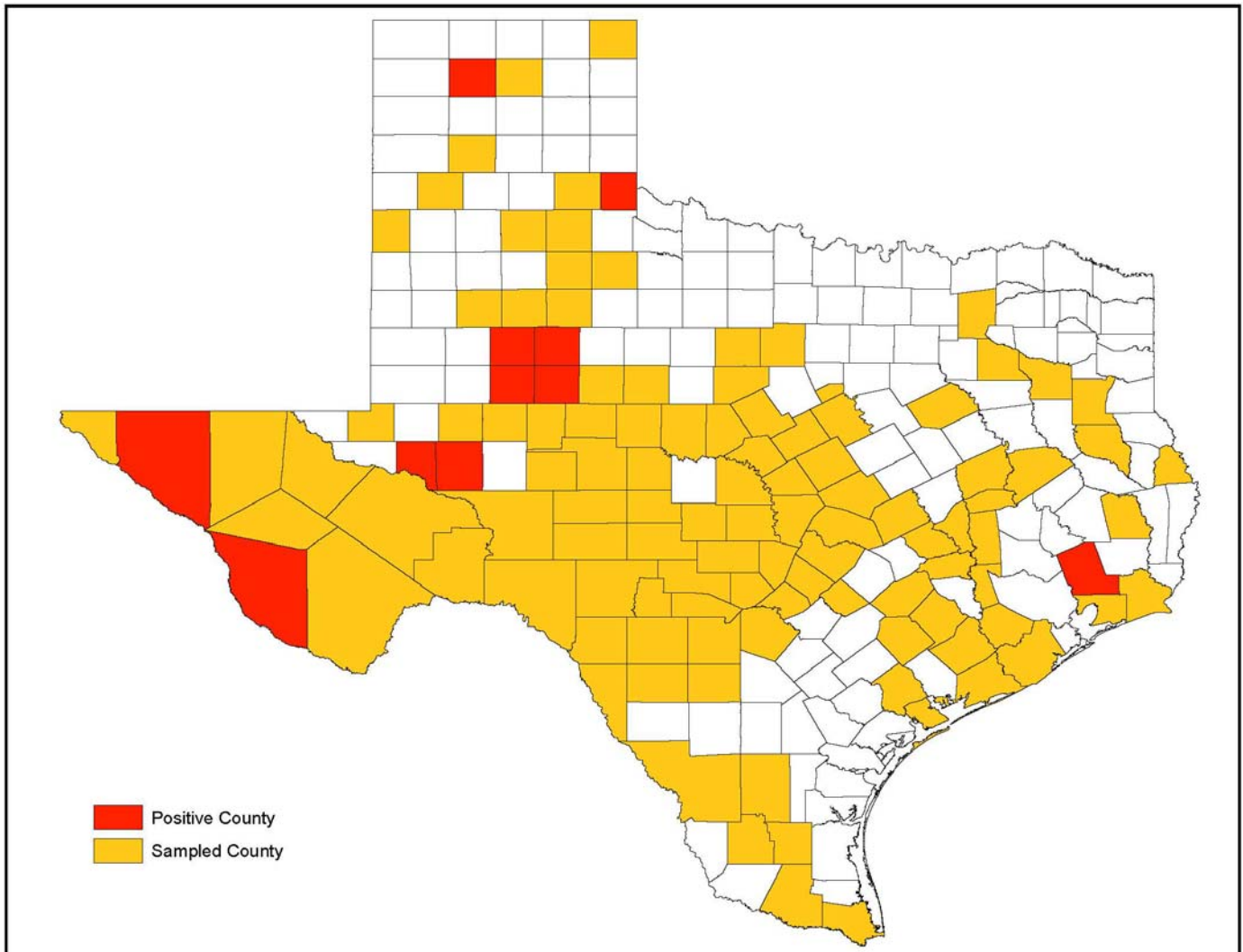
Table 1. Animals Positive for Plague by County and Titer, 2013

County	Result	Bobcat	Coyote	Gray Fox	Raccoon	Total	Number Tested (County, All Species)	Percent Positive (County, All Species)
Borden	1:128	1				1	32	6.3%
	1:256		1			1		
	Borden Total	1	1	0	0	2		
Childress	1:128		1			1	2	50.0%
Crane	1:64		2			2	54	13.0%
	1:128		2			2		
	1:2048		3			3		
	Crane Total	0	7	0	0	7		
Howard	1:1024		1			1	3	33.3%
Hudspeth	1:256		1			1	3	33.3%
Liberty	1:64				1	1	38	2.6%
Mitchell	1:2048		1			1	3	33.3%

County	Result	Bobcat	Coyote	Gray Fox	Raccoon	Total	Number Tested (County, All Species)	Percent Positive (County, All Species)
Moore	1:256		1			1	5	20.0%
Presidio	1:32			1		1	30	20.0%
	1:256		3			3		
	1:512		2			2		
	Presidio Total	0	5	1	0	6		
Scurry	1:32				1	1	12	8.3%
Upton	1:128		1			1	5	20.0%
Total		1	19	1	2	23	187	12.3%
Number Tested (Statewide)		26	950	383	141	1,500		
Percent Testing Positive		3.8%	2.0%	0.3%	1.4%	1.5%		

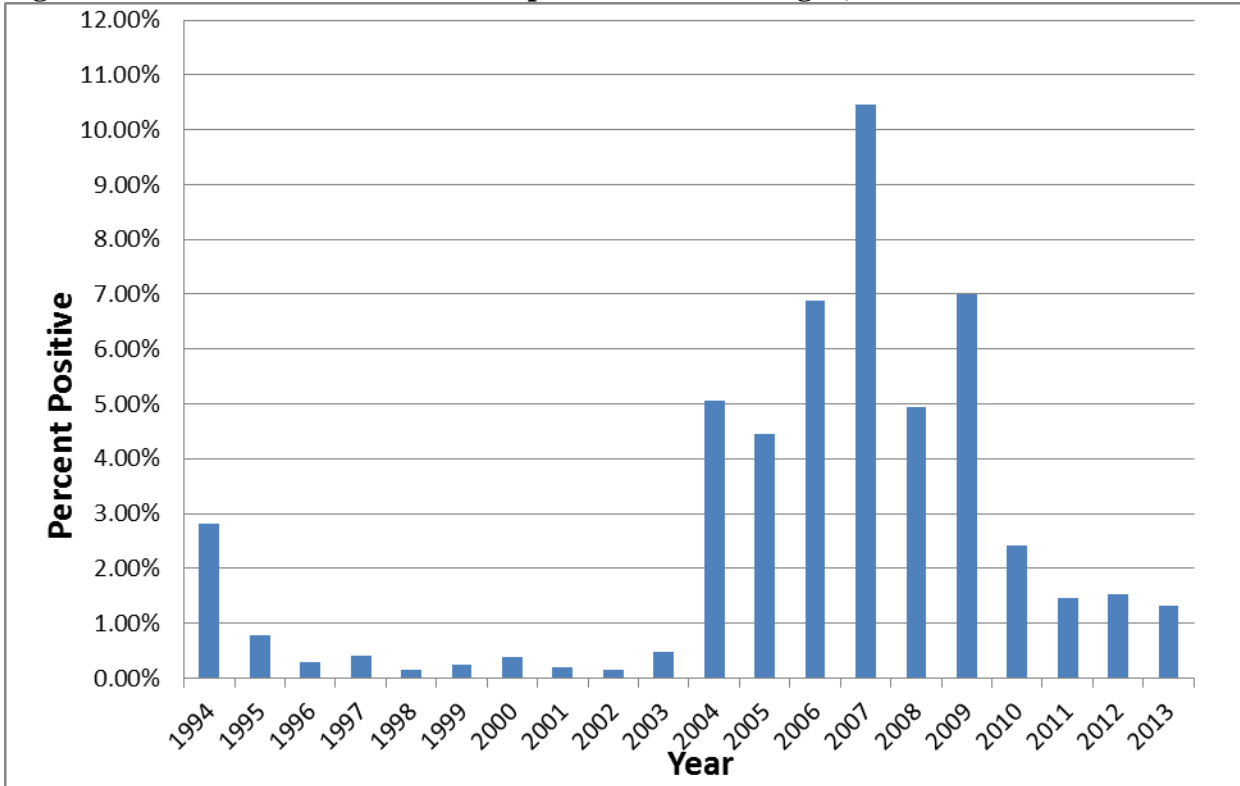
The geographic distribution by county of specimens tested and specimens testing positive for *Yersinia pestis* in 2013 is illustrated in Figure 1. A 20-year comparison of annual percent positivity is illustrated in Figure 2 on the next page.

Figure 1. Counties Sampled and Counties Positive for Plague, 2013



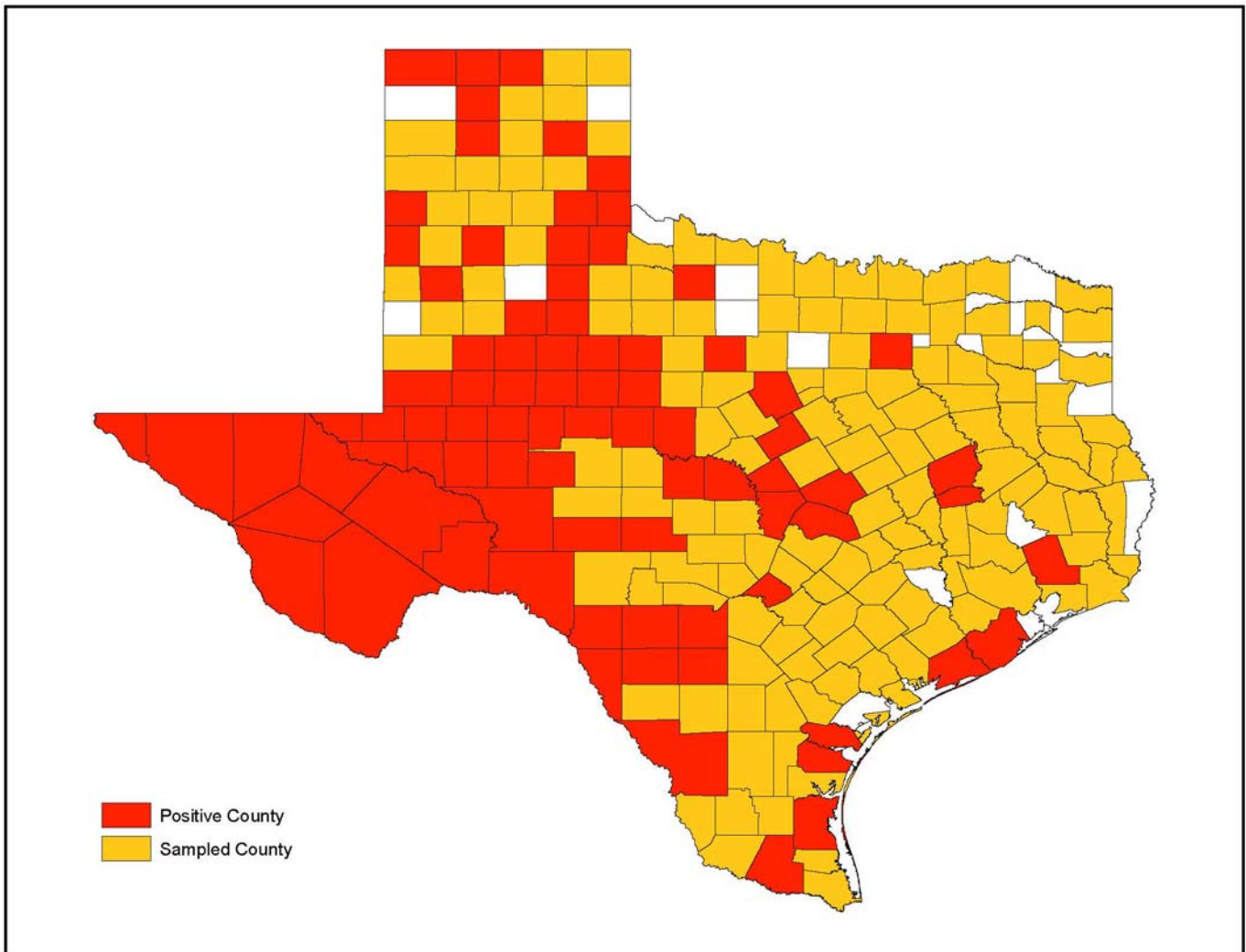
Comparing the percent of surveillance samples positive for plague during 2013 to the percent positive in the previous 19 years indicates a continued elevated, but more recently declining, level of plague activity for the 2004-2013 period compared to the 1994-2003 period (Figure 2). Factors such as climate, changing ecosystems, predator activity, and host and flea population size and dynamics may affect the extent of plague transmission within wildlife populations. Differences in sampling rates and the species and locations sampled may also affect the detection of plague activity within wildlife populations.

Figure 2. Percent of Surveillance Samples Positive for Plague, 1994-2013



The historic distribution of plague surveillance and detection in Texas is shown in Figure 3, on the following page. While plague is considered endemic in far west Texas and the Panhandle region, 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, 1976-2013



By using educational materials, news releases, a public-access website, and conference presentations, DSHS 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-endemic 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.

Table 2, beginning on the next page, shows the complete listing by county and species of samples that tested negative for plague in 2013.

Table 2. Animals Negative for Plague by County, 2013

County	Beaver	Bobcat	Brush Mouse	Coyote	Domestic Dog	Eastern Woodrat	Feral Pig	Gray Fox	Hispid Cotton Rat	Hog-Nosed Skunk	Hooded Skunk	Mountain Lion	Opossum	Other	Raccoon	Red Fox	Striped Skunk	Tawny-Bellied Cotton Rat	Western Spotted Skunk	White-Ankled or Footed Mouse	Total
Bailey				29																	29
Bandera								3													3
Bell							4		6											1	11
Bexar																				3	3
Blanco			1						8									1		10	20
Borden				27			2								1						30
Bosque															1						1
Brazoria				4																	4
Brazos				2		1															3
Brewster				1				1													2
Brooks				4																	4
Brown				12											2						14
Burleson				11											1						12
Burnet				7				1							1						9
Caldwell									1											1	2
Calhoun				3																	3
Cameron															1						1
Castro				1																	1
Chambers				18																	18
Childress				1																	1
Coke				7				4													11
Coleman		1		3				2							3						9
Colorado				3											4		1				8
Comal				4				2												2	8
Comanche								2													2
Concho		2		5				16							15						38
Coryell				13			6														19
Crane				47																	47
Crockett				2				5													7
Culberson				1																	1
De Witt				5																	5
Dickens				1																	1
Duval				25	2																27
Eastland				1																	1
Edwards				4				12							1					6	23
El Paso				2				1			1				1		32				37
Fayette				1																	1
Floyd				1																	1
Fort Bend																	43				43
Frio				1																	1
Garza				1											1						2
Gillespie		1		6				42							1						50
Glasscock				19				5							2						26
Grimes				2																	2
Hall				2																	2
Hamilton				5																	5
Hays				22																	22
Hidalgo				2																	2
Houston				3																	3

County	Beaver	Bobcat	Brush Mouse	Coyote	Domestic Dog	Eastern Woodrat	Feral Pig	Gray Fox	Hispid Cotton Rat	Hog-Nosed Skunk	Hooded Skunk	Mountain Lion	Opossum	Other	Raccoon	Red Fox	Striped Skunk	Tawny-Bellied Cotton Rat	Western Spotted Skunk	White-Ankled or Footed Mouse	Total	
Howard				1											1						2	
Hudspeth				2																		2
Hunt				10																		10
Hutchinson				1																		1
Irion								1							1							2
Jeff Davis								4														4
Jefferson				20																		20
Jim Hogg				19																		19
Kendall								11														11
Kent								1														1
Kerr								4														4
Kimble				7				15							12		1					34
King				3																		3
Kinney				8				8							4		9					29
Lampasas		1		9				8					1		8							27
Lavaca				3																		3
Leon				4													1					5
Liberty				14											23							37
Lipscomb				9																		9
Llano								1														1
Lynn				7																		7
Madison				8																		8
Mason								7							2		1					10
Matagorda				6																		6
Maverick		1		21																		22
McCulloch		3		8				28							18		2					59
Medina				1																		1
Menard				2				6							4							12
Midland		2		1																		3
Milam				1																		1
Mills	1			54			2	12							1	1						71
Mitchell				2																		2
Moore				4																		4
Motley				28																		28
Nacogdoches							2															2
Nolan				6																		6
Palo Pinto				5			2															7
Pecos		1		29				9							3							42
Presidio				22				1				1										24
Randall		1		33											5							39
Real														3						2		5
Reeves				4													2					6
Runnels		1		37				10							2							50
Rusk				3			2															5
Sabine				2																		2
San Saba				24			2	17														43
Schleicher				3				3														6
Scurry				9			1								1							11
Smith																	4					4
Somervell							1															1

County	Beaver	Bobcat	Brush Mouse	Coyote	Domestic Dog	Eastern Woodrat	Feral Pig	Gray Fox	Hispid Cotton Rat	Hog-Nosed Skunk	Hooded Skunk	Mountain Lion	Opossum	Other	Raccoon	Red Fox	Striped Skunk	Tawny-Bellied Cotton Rat	Western Spotted Skunk	White-Ankled or Footed Mouse	Total
Stephens				16				1													17
Sterling		6		36				20							10	1					73
Sutton		1		2				6							5		3				17
Taylor				5																	5
Terrell								33							1		1				35
Tom Green				1				20		1					1		29		1		53
Tyler				4																	4
Upton				2				2													4
Uvalde				5				1													6
Val Verde		3		4			1	55		1							8		1		73
Van Zandt																	4				4
Victoria				3																	3
Waller															2		29				31
Washington				4																	4
Webb				98																	98
Wharton				1																	1
Williamson				7																	7
Winkler		1						2													3
Zavala				5																	5
Total	1	25	1	931	2	1	25	382	15	2	1	1	1	3	139	2	170	1	2	25	1,730