

2012 TEXAS PLAGUE SURVEILLANCE REPORT

(Revised 10-10-14)

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. 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 2012.

Plague in Animals

The DSHS Laboratory Services Section received 1,636 animal samples collected during calendar year 2012 from 104 counties, of which 1,624 were tested; 12 samples were not tested due to damage or insufficient quantity. Plague antibodies at a titer of $\geq 1:32$, which indicates probable exposure to *Y. pestis*, were reported for 25 samples (1.5% of all samples tested) collected from 17 counties (Table 1); 1,599 samples (98.5% of samples tested) were negative at a titer of $<1:32$ (Table 2).

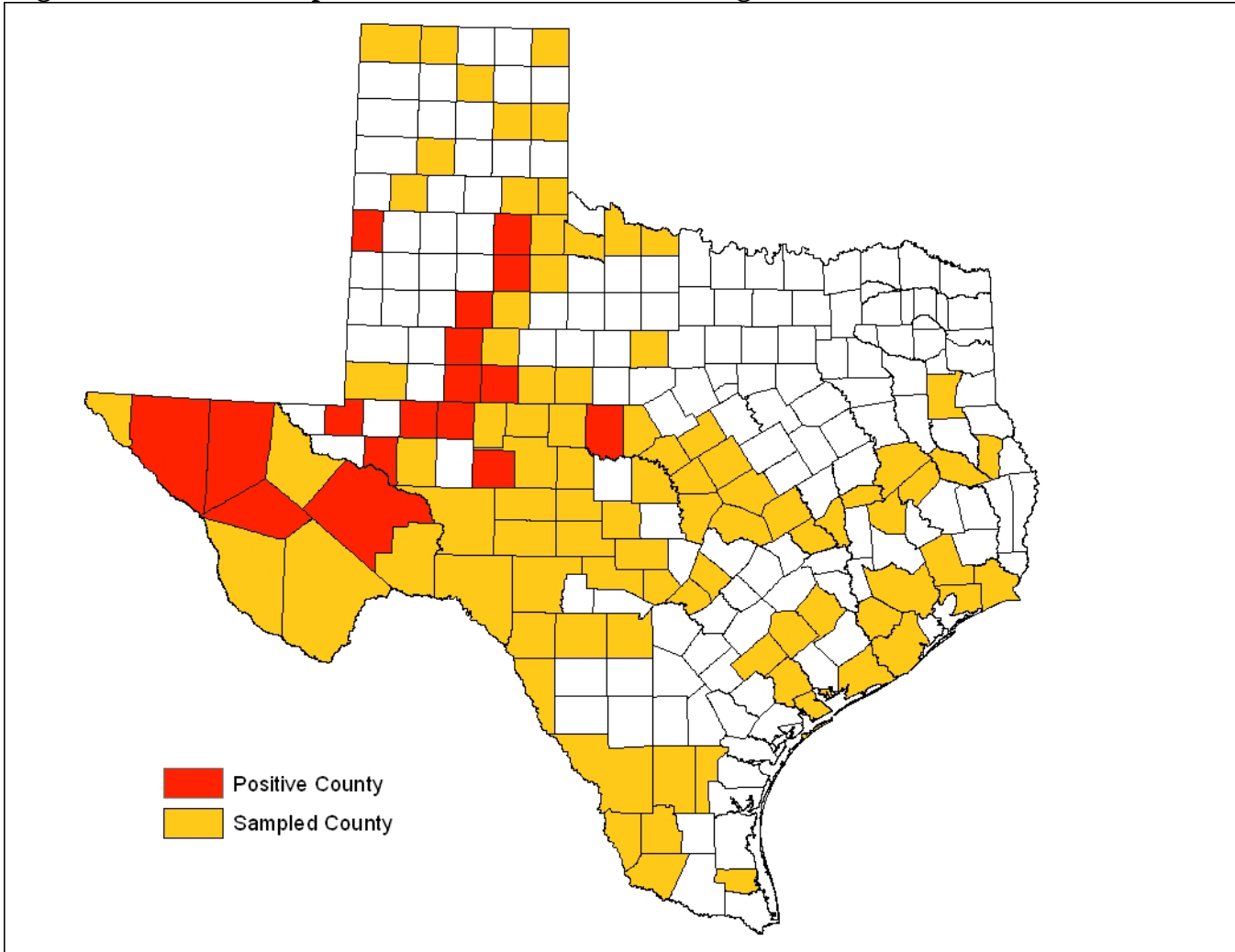
Table 1. Animals Positive for Plague by County and Titer, 2012

County	Result	Bobcat	Coyote	Gray Fox	Raccoon	Total Positive	Number Tested (County, All Species)	Percent Positive (County, All Species)
Bailey	1:256		1			1	31	3.2%
Borden	1:64		1			1		
	1:512				1	1		
	Borden Total	0	1	0	1	2	45	4.4%
Coleman	1:128			1		1	2	50.0%
Crane	1:64		1			1		
	1:256		1			1		
	Crane Total	0	2	0	0	2	65	3.1%
Culberson	1:256		1			1		
	1:512		1			1		
	1:2048		1			1		
	Culberson Total	0	3	0	0	3	12	25.0%

County	Result	Bobcat	Coyote	Gray Fox	Raccoon	Total Positive	Number Tested (County, All Species)	Percent Positive (County, All Species)
Dickens	1:256		1			1	2	50.0%
Garza	1:256		1			1		
	1:2048				1	1		
	Garza Total	0	1	0	1	2	15	13.3%
Glasscock	1:32	1				1	21	4.8%
Howard	1:128		1			1	8	12.5%
Hudspeth	1:256		1			1		
	1:512		1			1		
	1:1024		1			1		
	Hudspeth Total	0	3	0	0	3	18	16.7%
Irion	1:128			1		1	8	12.5%
Jeff Davis	1:512		1			1	24	4.2%
Midland	1:256		1			1	14	7.1%
Mitchell	1:128	1				1	10	10.0%
Motley	1:32		1			1	11	9.1%
Pecos	1:128		1			1	170	0.6%
Winkler	1:256		1			1		
	1:512		1			1		
	Winkler Total	0	2	0	0	2	11	18.2%
Total		2	19	2	2	25	467	5.4%
Number Tested (Statewide)		47	1,127	238	85	1,497		
Percent Testing Positive		4.3%	1.7%	0.8%	2.4%	1.7%		

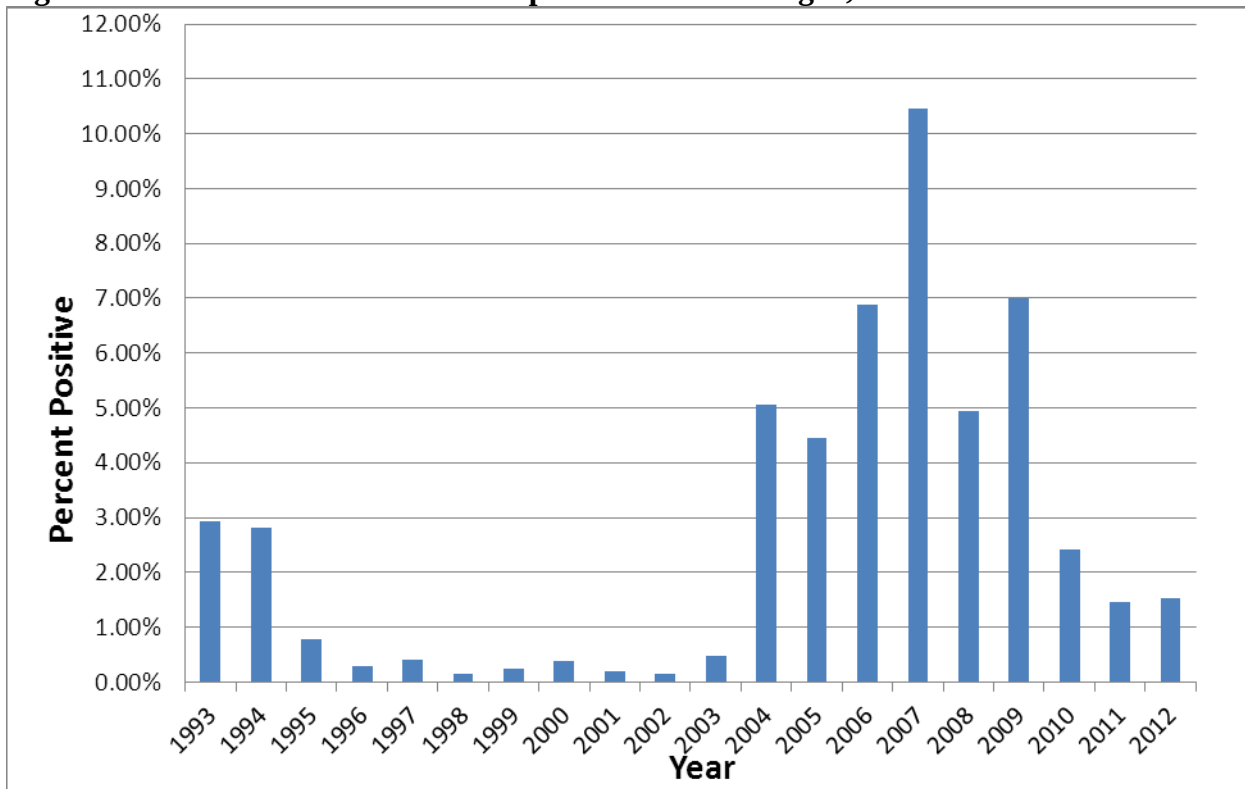
The geographic distribution by county of specimens tested and specimens testing positive for *Yersinia pestis* in 2012 is illustrated in Figure 1. A 20-year comparison of annual percent positivity is illustrated in Figure 2 on the next page.

Figure 1. Counties Sampled and Counties Positive for Plague, 2012



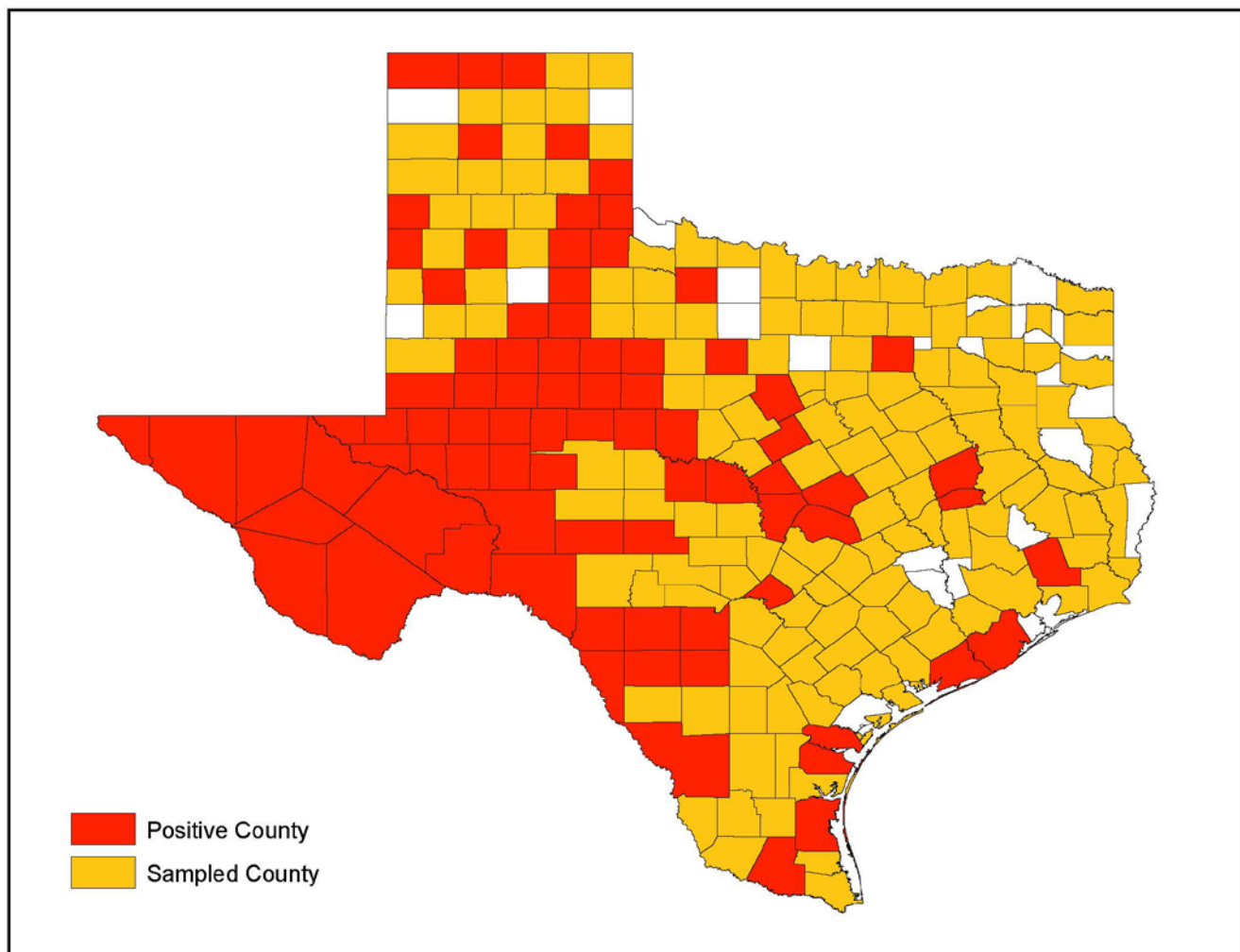
Comparing the percent of surveillance samples positive for plague during 2012 to the percent positive in the previous 19 years indicates a continued elevation in detected plague activity for 2004-2012 compared to detected activity from 1995-2003 (Figure 2), although percent positivity for 2012 was significantly lower than that in the previous 6 years. 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, 1993-2012



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, 1976-2012



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 2012.

Table 2. Animals Negative for Plague by County, 2012

County	Badger	Beaver	Bobcat	Coyote	Domestic Dog	Feral Hog	Gray Fox	Hog Nosed Skunk	Raccoon	Red Fox	Striped Skunk	Total
Andrews				1								1
Angelina				1								1
Bailey				30								30
Bell				13								13
Borden			2	34		6			1			43
Brazoria				15					1			16
Brazos				3								3
Brewster				15			21					36
Brown			1	5								6
Burleson				4								4
Burnet				9								9
Calhoun				4								4
Castro				1								1
Chambers				45	1							46
Childress				5								5
Coke				8			6		2		1	17
Coleman							1					1
Colorado				1					1			2
Comal				3								3
Concho				2			1					3
Coryell				7								7
Cottle				5								5
Crane				63								63
Crockett			2				26		1			29
Culberson				8							1	9
Dallam				15								15
De Witt				3								3
Dickens				1								1
Duval				19								19
Edwards				5			4		3	1		13
El Paso							1				1	2

County	Badger	Beaver	Bobcat	Coyote	Domestic Dog	Feral Hog	Gray Fox	Hog Nosed Skunk	Raccoon	Red Fox	Striped Skunk	Total
Foard				1								1
Fort Bend									13		63	76
Garza				3		7			3			13
Gillespie				3			2		3			8
Glasscock				20								20
Gray						3						3
Hall				5								5
Hamilton				2								2
Harris				3								3
Hays				17								17
Houston		2		6								8
Howard				6					1			7
Hudspeth				15								15
Hutchinson									1			1
Irion				1			2		4			7
Jeff Davis				15			8					23
Jefferson				41								41
Jim Hogg				16								16
Jim Wells			1	2								3
Kendall							3					3
Kent											1	1
Kerr				3			1					4
Kimble			1	9			1		6			17
King				6								6
Kinney			4	14			13		1		7	39
Lampasas			1	24			2		3			30
Lavaca				11								11
Liberty				2								2
Lipscomb				2					3			5
Madison				4					1			5
Mason											1	1
Matagorda				18								18

County	Badger	Beaver	Bobcat	Coyote	Domestic Dog	Feral Hog	Gray Fox	Hog Nosed Skunk	Raccoon	Red Fox	Striped Skunk	Total
Maverick			1	18								19
Medina							1					1
Menard				1								1
Midland				12							1	13
Milam				2							1	3
Mills				10			2		2			14
Mitchell			1	8								9
Motley				10								10
Nolan				11								11
Pecos			14	95		1	48		10		1	169
Presidio				6			9					15
Randall				9					3			12
Reeves				4								4
Runnels				55								55
Rusk						4						4
San Augustine		1										1
San Saba				11		3	3					17
Schleicher				1			1		1			3
Scurry				3								3
Sherman				5								5
Starr				7								7
Stephens				22								22
Sterling			5	47			16		8			76
Sutton			5	8			11		3			27
Taylor				14								14
Terrell				2			25	1	5		1	34
Tom Green				3			1		1		4	9
Trinity		1										1
Upton	1		2	27								30
Uvalde			1	10			1		1			13
Val Verde			2	6			25				12	45
Victoria			1	11								12

County	Badger	Beaver	Bobcat	Coyote	Domestic Dog	Feral Hog	Gray Fox	Hog Nosed Skunk	Raccoon	Red Fox	Striped Skunk	Total
Walker				1								1
Webb				80								80
Wheeler				4					1			5
Wichita				2								2
Wilbarger				1								1
Willacy				2								2
Williamson			1	16			1					18
Winkler				9								9
Zapata				1								1
Total Negative	1	4	45	1108	1	24	236	1	83	1	95	1599