

2005 PLAGUE SURVEILLANCE REPORT

(REVISED 10-10-14)

Each year the Texas Department of State Health Services (DSHS), in conjunction with Texas Cooperative Extension/Wildlife Services, Texas Parks and Wildlife Department, and other agencies, collects samples from wildlife for plague (*Yersinia pestis*) testing. Samples are collected primarily from carnivores using Nobuto blood filter strips. Although most carnivores are resistant to plague, they develop antibodies when exposed to the plague organism, thereby making good indicators of local plague activity.

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. *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 (editor's note: a human case has since been reported in 2006), surveillance results indicate that there are natural reservoirs for the organism in much of the state.

The DSHS Laboratory Services Section and the U.S. Centers for Disease Control and Prevention-Division of Vector-Borne Infectious Disease (CDC) tested 2,842 animal and arthropod samples (2,399 animal samples tested at DSHS; 443 arthropod samples tested at CDC) from 106 counties during calendar year 2005. Plague antibodies at a titer of 1:32 or greater, which indicates probable exposure to plague, were reported for 107 samples (3.8% of all samples tested) from 14 counties. Note that Table 1 includes only positive results and lists only those animal species for which there was at least 1 positive result. Negative results are reported separately in Table 2. Also note that the bulk of the arthropod samples, all of which were negative for plague, are listed in Table 2 under "county unknown" because the exact county from which each was collected is unknown; however, these samples represent collections from Culberson, Jeff Davis, Pecos, Presidio, and Terrell counties.

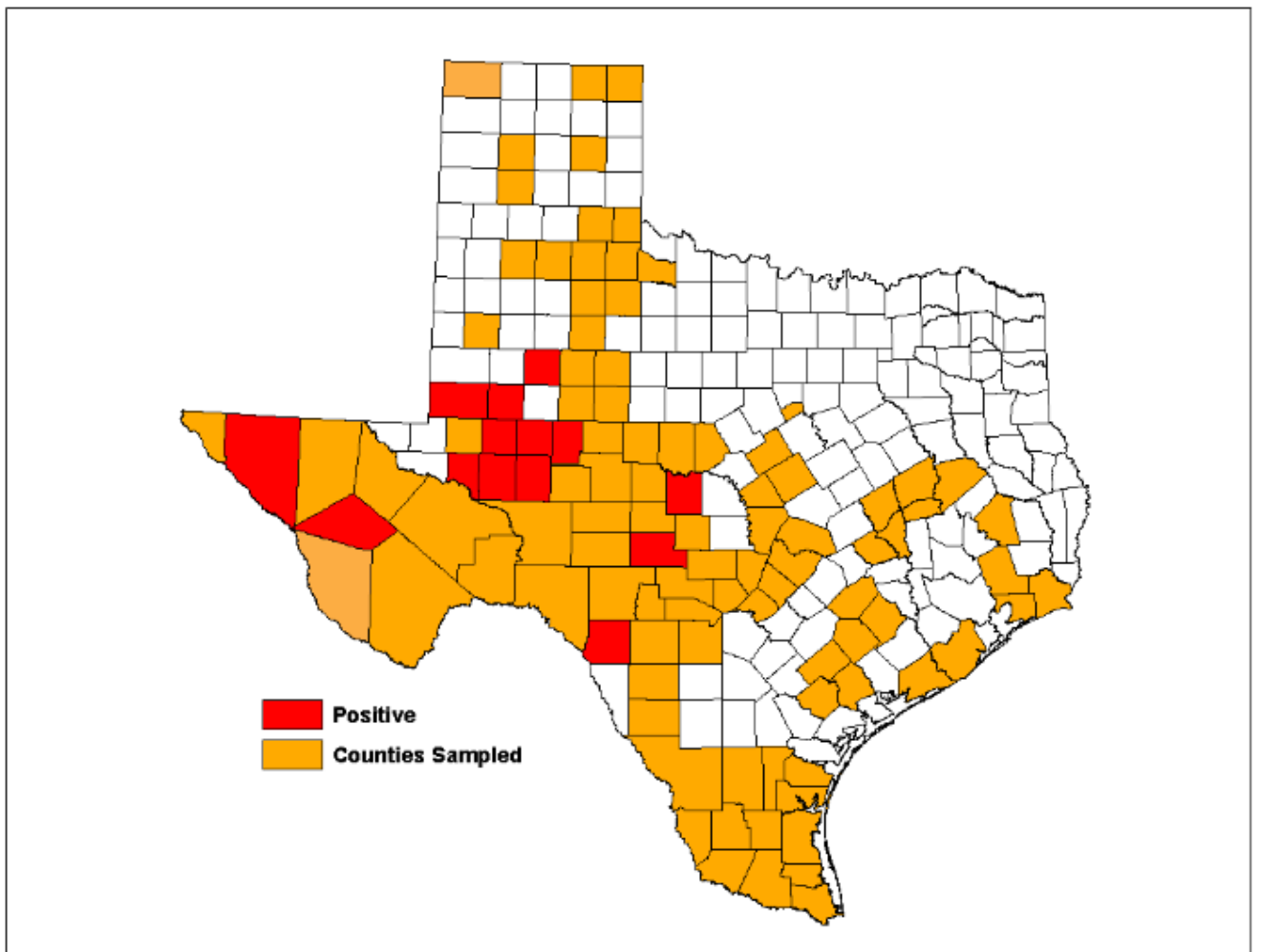
Table 1. Animals Positive for Plague by County and Result, 2005

County	Result	American Badger	Bobcat	Coyote	Eastern Cottontail	Feral pig	Gray Fox	Raccoon	Red Fox	Striped Skunk	Thirteen-lined Ground Squirrel	Total
Andrews	1:2048			1								1
Borden	1:64					1						1
	1:128			2								2
	1:256			3			1					4
	1:512			1								1
	1:1024			1		1						2
	1:2048			1	8							9
Crane	1:64			1								1
	1:128			4								4
	1:256			1								1
	1:1024	1		5								6
	1:2048			5								5
Glasscock	1:32							1				1
	1:64		1				1					2
	1:128			1								1
	1:256			1					1			2
	1:512			3			1	1				5
	1:1024			2			1		1			4
	1:2048			6				1				7
Hudspeth	1:512			1								1
Jeff Davis	1:64			1								1
	1:1024			1								1
	1:2048			1								1
Kimble	1:64			1								1
	1:128						1					1
Kinney	1:128		1									1
Martin	1:1024			1								1
McCulloch	1:64									1		1
Midland	1:64					1						1
	1:256			2							1	3
	1:512			6								6
	1:1024			4				1				6
	1:2048			7					2			9
	1:4096			1								1

County	Result	American Badger	Bobcat	Coyote	Eastern Cottontail	Feral pig	Gray Fox	Raccoon	Red Fox	Striped Skunk	Thirteen-lined Ground Squirrel	Total
Reagan	1:512			1								1
	1:2048						1					1
Sterling	1:512			1								1
	1:2048			1								1
Upton	1:32			1								1
	1:256			2								2
	1:512		1	1			1					3
	1:1024			2								2
	1:2048			1								1
Number Positive		1	6	80	1	2	7	6	2	1	1	107
Number Tested		3	287	1400	3	4	351	279	24	18	1	2370
Percent of Listed Species Testing Positive		33.3%	2.1%	5.7%	33.3%	50.0%	2.0%	2.2%	8.3%	5.6%	100.0%	4.5%

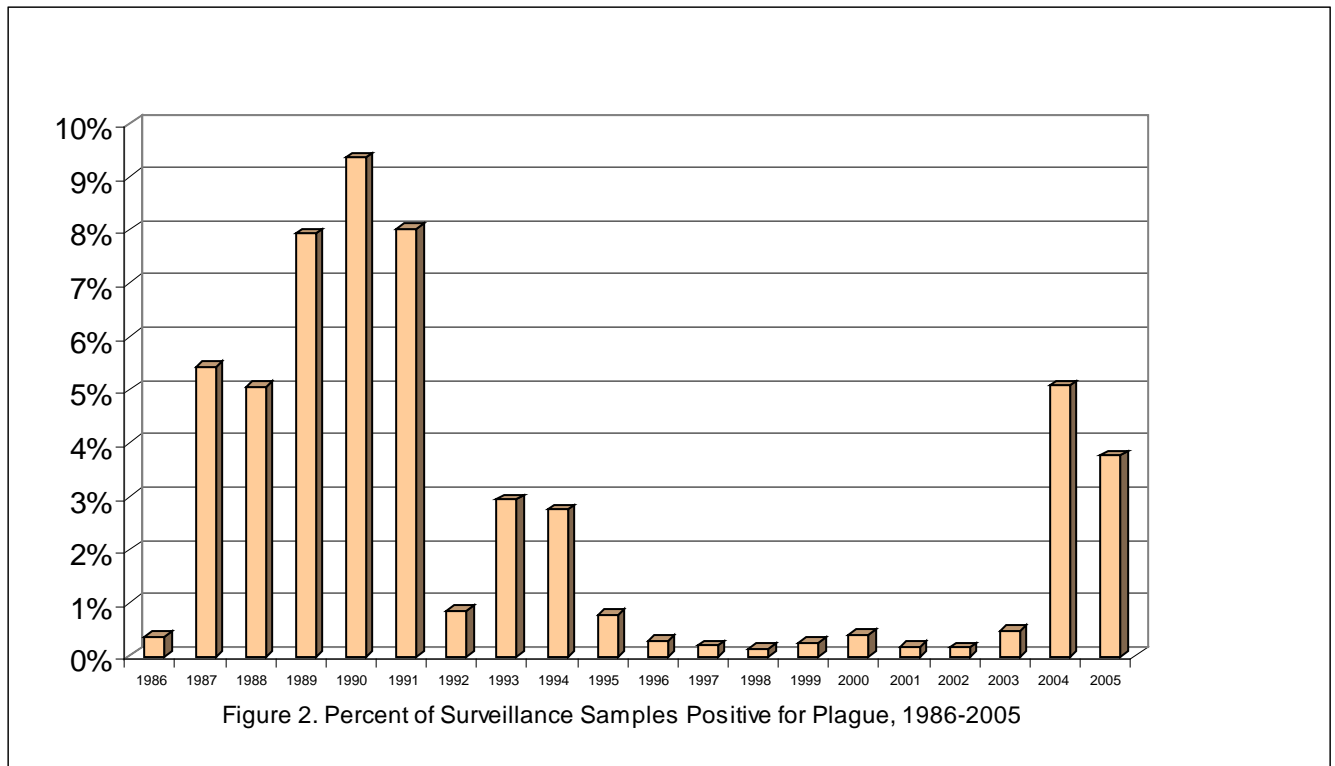
The geographic distribution of specimens collected and specimens testing positive for 2005 is illustrated in Figure 1.

Figure 1. Counties Sampled and Counties Positive for Plague, 2005



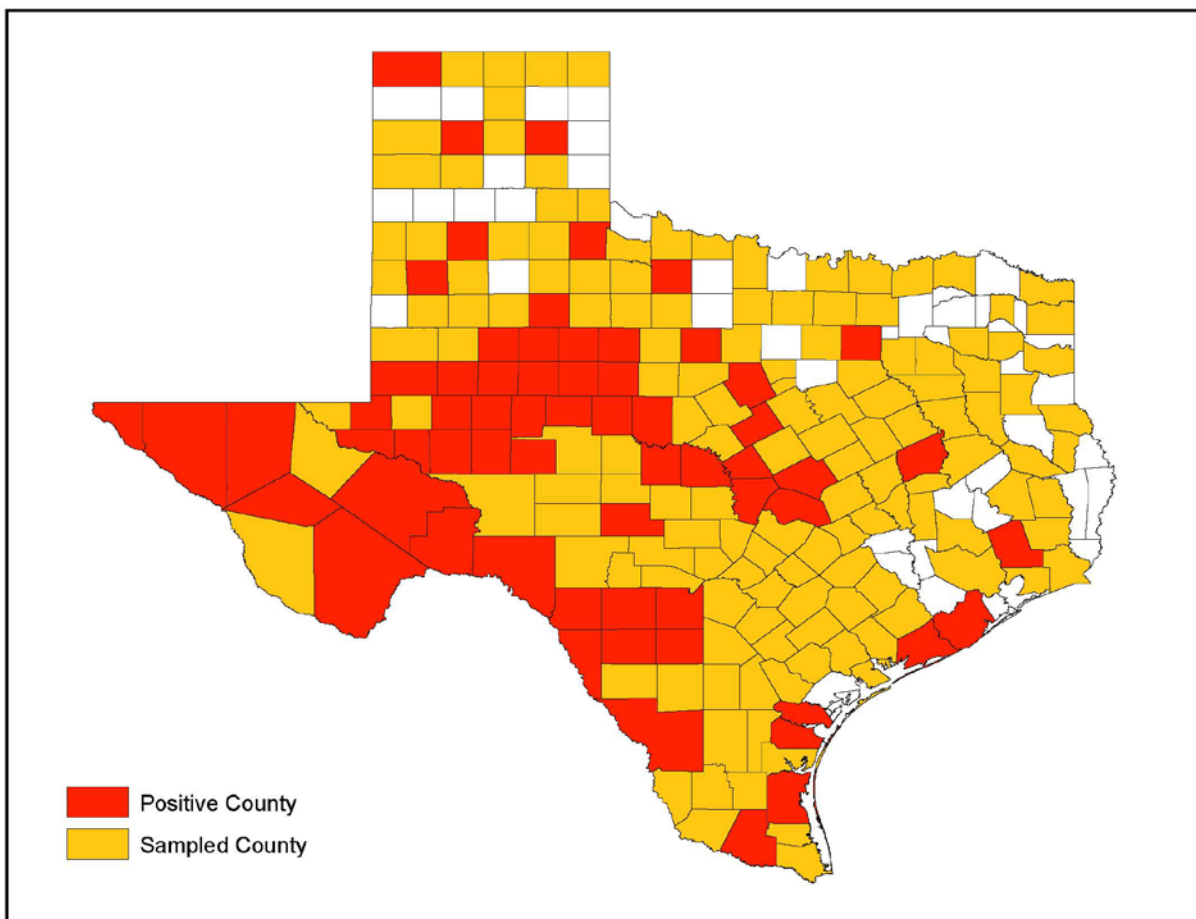
Comparing the percent of surveillance samples positive for plague during 2005 to the percent positive in previous years indicates a noticeable increase in 2004 and 2005 compared to activity since 1995, which has been a period of relatively low plague activity in Texas (Figure 2). Factors such as climate, changing ecosystems, predator activity, and host population size and dynamics may all affect the potential for plague transmission within wildlife populations.

Figure 2. Percent of Surveillance Samples Positive for Plague, 1986-2005



The historic distribution of plague surveillance and detection 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, 1976-2005



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 2005.

Table 2. Animals Negative for Plague by County, 2005¹

County	American Badger	Black-tailed Prairie Dog	Bobcat	Coyote	Eastern Cottontail	Feral Pig	Flea	Gray Fox	Mountain Lion	Raccoon	Red Fox	Striped Skunk	Tick	Virginia Opossum	Grand Total
Andrews				5											5
Bandera			1												1
Blanco				4				1							5
Borden			5	52				2		6		1		1	67
Brazoria			1	51											52
Brazos										4					4
Brewster			7	15				9	1	1					33
Brooks				1											1
Brown								3							3
Burleson				4											4
Burnet				10											10
Cameron			3	11						18		4		10	46
Chambers				51			1			3					55
Childress				3											3
Coke			34	12				25		1	1				73
Coleman				1											1
Colorado				1						13		1			15
Comal				7											7
Concho				1											1
Coryell				9											9
Cottle				1											1
Crane	1		3	138											142
Crockett			5					15			3				23
Culberson				1											1
Dallam							1								1
De Witt				1											1
Dickens			2	6											8
Dimmit				23											23
Duval				13											13
Ector				2											2
Edwards			9	1				14		45	1				70
El Paso				2											2
Fayette				3											3
Fisher				1											1
Floyd				1											1

County	American Badger	Black-tailed Prairie Dog	Bobcat	Coyote	Eastern Cottontail	Feral Pig	Flea	Gray Fox	Mountain Lion	Raccoon	Red Fox	Striped Skunk	Tick	Virginia Opossum	Grand Total
Foard			1							1					2
Gillespie			2	24				3		1	1				31
Glasscock			11	30				12		13	8				74
Goliad				11											11
Gray				6											6
Hale				1											1
Hall				2											2
Hamilton				24				1		2					27
Hays			1	26											27
Hidalgo			5	60										1	66
Houston				10											10
Hudspeth				6											6
Irion			3	4				5							12
Jeff Davis				7											7
Jefferson				105											105
Jim Hogg				7											7
Jim Wells				1											1
Kendall				5				1		1					7
Kenedy			2												2
Kent				6											6
Kerr				5											5
Kimble			15	24				15		43	1			2	100
King				2											2
Kinney			8	19				6		3					36
Kleberg										1					1
Lampasas			3	34				2		7		2			48
Lavaca				4											4
Leon				2											2
Liberty				5						1					6
Lipscomb				9											9
Madison				5											5
Martin				1											1
Mason										1					1
Matagorda				8											8
McCulloch				1				10		1					12
Medina				2						1					3
Menard			4	15				11		3					33
Midland		1	2	37				3		1					44

County	American Badger	Black-tailed Prairie Dog	Bobcat	Coyote	Eastern Cottontail	Feral Pig	Flea	Gray Fox	Mountain Lion	Raccoon	Red Fox	Striped Skunk	Tick	Virginia Opossum	Grand Total
Mitchell				11											11
Motley				14						1					15
Nolan				11				1			1				13
Nueces				4						3		7		2	16
Ochiltree			1												1
Pecos			33	50		1		40	1	10					135
Polk				3											3
Potter				3											3
Randall				3	2					1					6
Real			7	5				2							14
Reeves				1											1
Robertson				1											1
Runnels				2											2
Schleicher			7												7
Scurry			3	31						6		2		8	50
Somervell				1											1
Starr			1	22											23
Sterling			11	21				12		25	2				71
Sutton			1	1				1		8					11
Terrell	1		42	8				32	1	24	1				109
Terry								1							1
Tom Green			6	3				23		4	2			1	39
Travis				5						1					6
Upton			6	13				24							43
Uvalde			1	10				2			1				14
Val Verde			31	8				66		18					123
Victoria			1	6											7
Webb			1	71											72
Willacy				4											4
Williamson				15				2							17
Zapata			2	47						1					50
Zavala				7											7
County Unknown							138						304		442
Total Negative	2	1	281	1320	2	2	139	344	3	273	22	17	304	25	2735

¹**NOTE:** The bulk of the arthropod samples, all of which were negative for plague, are included under “County Unknown” in Table 2 because the exact county from which each was collected is unknown; however, these samples represent collections from Culberson, Jeff Davis, Pecos, Presidio, and Terrell counties.