2006 PLAGUE SURVEILLANCE REPORT (REVISED 9-18-14)

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. 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. *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 is well known. In 2006, 1 non-fatal case of plague was reported to DSHS in a Texas resident who was infected while hunting rabbits in New Mexico.

The DSHS Laboratory Services Section and the U.S. Centers for Disease Control and Prevention (CDC)-Division of Vector-Borne Infectious Disease tested 2,229 animal and arthropod samples (2,218 animal samples tested at DSHS; 11 arthropod samples tested at CDC) from 108 counties during calendar year 2006. Plague antibodies at a titer of 1:32 or greater, which indicates probable exposure to plague, were reported for 153 samples (6.9% of all samples tested) from 20 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.**

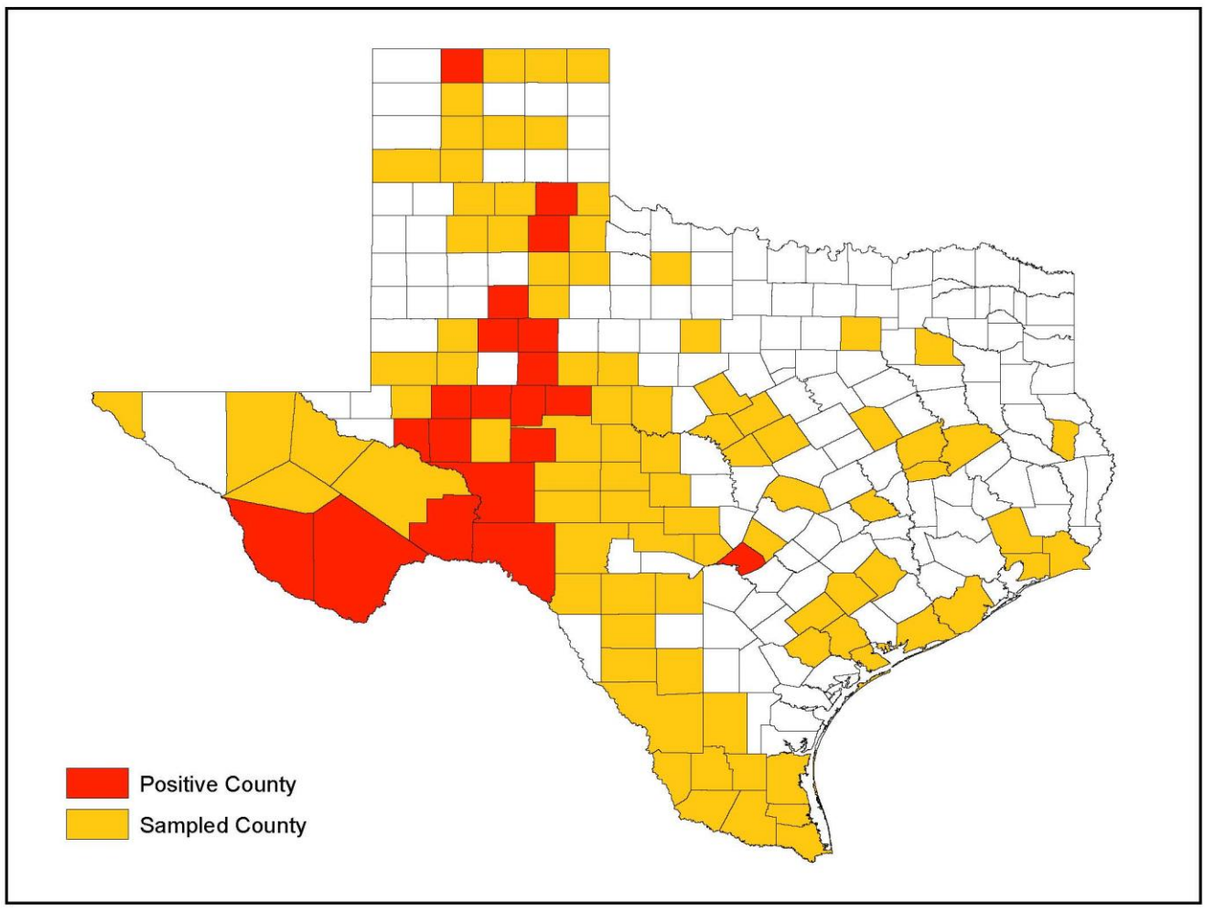
Table 1. Animals Positive for Plague by County and Result, 2006

County	Result	Bobcat	Coyote	Feral Pig	Flea	Gray Fox	Raccoon	Red Fox	Total
Borden	1:64	1							1
	1:128		1						1
	1:256	1	3				1		5
	1:512		5						5
	1:1024	2	5			2			9
	1:2048	3	27			3	3		36
	1:4096		5				1		6
Brewster	1:256		1						1
Coke	1:256					1			1
Comal	1:512					1			1
Crane	1:512		1						1
	1:1024		3						3
	1:2048		10						10
Crockett	1:32			2					2
	1:1024		1						1
Garza	1:256		1						1
	1:1024		1						1
Glasscock	1:64		1						1
	1:128		3					1	4
	1:512		3					1	4
	1:1024		1					1	2
	1:2048		4						4
Hall	1:1024		1						1
	1:2048		1						1
Irion	1:256		1						1
Midland	1:64		1						1
	1:128		1						1
	1:512		2					1	3
	1:2048		7						7
Mitchell	1:128		1						1
Motley	1:128		1						1
	1:512		2						2
	1:1024		1						1
	1:2048		6						6
Presidio	1:128		1						1
	1:256		1						1
	1:512	1							1
	1:1024	1	2						3
	1:2048		2						2

County	Result	Bobcat	Coyote	Feral Pig	Flea	Gray Fox	Raccoon	Red Fox	Total
Scurry	1:64		1						1
	1:256		1						1
	1:2048		1				1		2
	1:4096						1		1
Sherman	Positive				1				1
Sterling	1:128		1						1
	1:512		1						1
	1:1024		2						2
	1:2048	1	1			1			3
Terrell	1:64		1						1
Upton	1:512	1	1						2
	1:2048		2						2
Val Verde	1:32	1							1
Number of Listed Species Positive		**12**	**119**	**2**	**1**	**8**	**7**	**4**	**153**
Number of Listed Species Tested		**217**	**1288**	**21**	**3**	**363**	**209**	**25**	**2126**
Percent of Listed Species Testing Positive		**5.5%**	**9.2%**	**9.5%**	**33.3%**	**2.2%**	**3.3%**	**16.0%**	**7.2%**

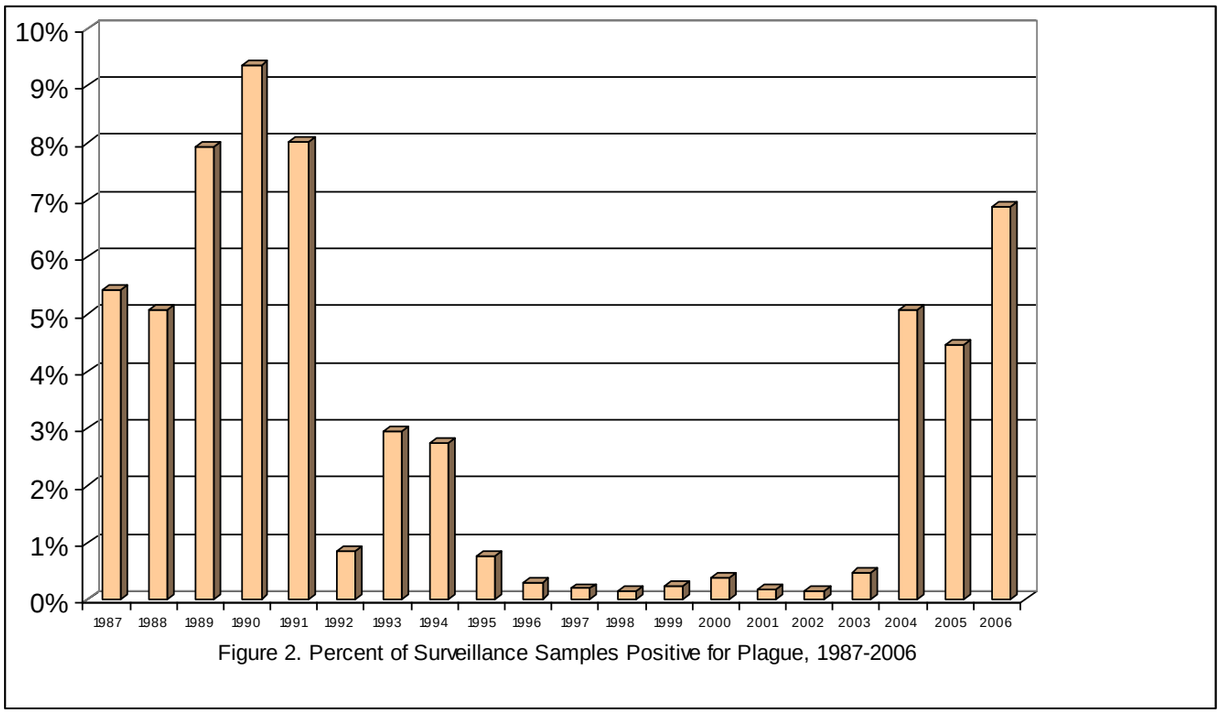
The geographic distribution of specimens collected and specimens testing positive for 2006 is illustrated in Figure 1.

Figure 1. Counties Sampled and Counties Positive for Plague, 2006



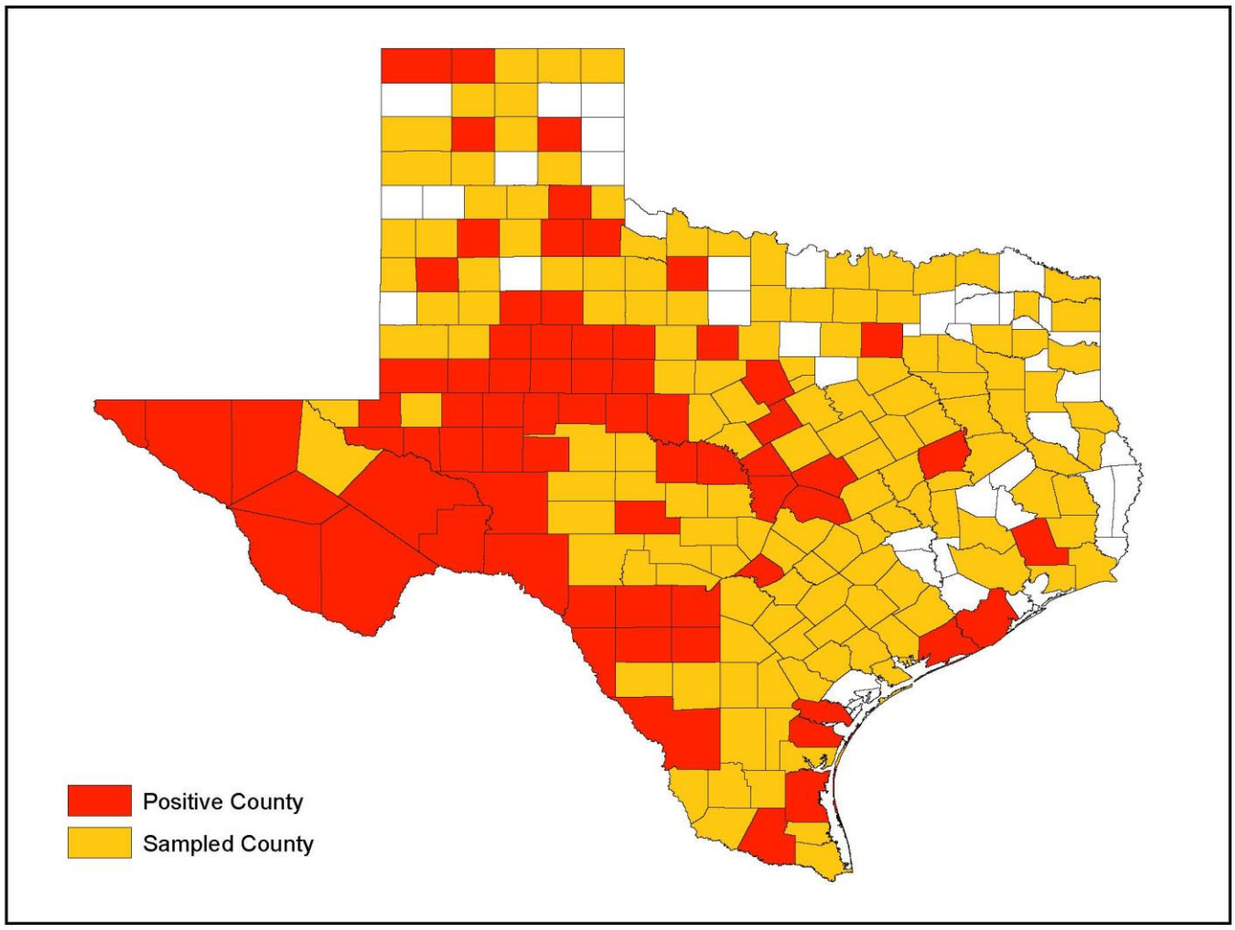
Comparing the percent of surveillance samples positive for plague during 2006 to the percent positive in previous years indicates a noticeable increase in 2004, 2005, and 2006 compared to activity since 1995, which has been a period of relatively low plague activity in Texas (Figure 2). Factors such 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, 1987-2006



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, 1976-2006



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 2006.

Table 2. Animals Negative for Plague by County, 2006

County	American Badger	American Beaver	Black-tailed Jackrabbit	Bobcat	Coyote	Eastern Cottontail	Eastern Woodrat	Porcupine	Feral Pig	Flea	Gray Fox	Mountain Lion	Nutria	Raccoon	Red Fox	Striped Skunk	Swift Fox	Tick	Virginia Opossum	Total
Andrews					5															**5**
Baylor					1															**1**
Borden				6	11									1		1			3	**22**
Brazoria					15															**15**
Brewster				3	18						26					1				**48**
Briscoe				1	1															**2**
Brooks					11															**11**
Burleson																1				**1**
Calhoun									3											**3**
Cameron					2									5					6	**13**
Carson						1														**1**
Chambers					32															**32**
Childress					4															**4**
Coke				20	6						32				1	1				**60**
Coleman				1	1															**2**
Colorado														13		1				**14**
Comal					14															**14**
Comanche					7						12									**19**
Concho				2	3						2			6						**13**
Coryell					6															**6**
Cottle					1															**1**
Crane	1			3	104						2			1						**111**
Crockett				10	4				5		14				2					**35**
Culberson			2		5															**7**
Dallas														5						**5**
Dawson					1															**1**
De Witt					7															**7**
Deaf Smith					2															**2**
Dickens				1	2															**3**
Dimmit					11															**11**
Duval					14															**14**
Ector					1															**1**
Edwards				3	1						7		1	44		1				**57**
El Paso		1																		**1**
Floyd					2															**2**

County	American Badger	American Beaver	Black-tailed Jackrabbit	Bobcat	Coyote	Eastern Cottontail	Eastern Woodrat	Porcupine	Feral Pig	Flea	Gray Fox	Mountain Lion	Nutria	Raccoon	Red Fox	Striped Skunk	Swift Fox	Tick	Virginia Opossum	Total
Gillespie					2										2					**4**
Glasscock				2	22						3				5					**32**
Goliad					10															**10**
Gray				1	9															**10**
Hale					1															**1**
Hall					2															**2**
Hamilton					7														1	**8**
Hansford				1																**1**
Hays				1	26															**27**
Hidalgo					44															**44**
Houston		1			1															**2**
Irion				5	1						9			2	1	1				**19**
Jeff Davis					3				2		1									**6**
Jefferson					43															**43**
Jim Hogg					23															**23**
Kendall	1				8						5			1						**15**
Kenedy				1	50															**51**
Kent					9									1						**10**
Kerr	1				16									4		1				**22**
Kimble				7	9				1		12			30						**59**
King					3															**3**
Kinney				2	8						6			3		3				**22**
La Salle					1									5						**6**
Lampasas	1				27						6			4		1				**39**
Lavaca				1	17															**18**
Leon					8															**8**
Liberty					15															**15**
Limestone														1		8				**9**
Lipscomb					5															**5**
Madison					9						1									**10**
Martin					5															**5**
Mason														1						**1**
Matagorda					12															**12**
McCulloch					5						4									**9**
Medina					2															**2**
Menard				1	7						3				1					**12**
Midland				4	12						1			3	2					**22**
Mills					2															**2**

County	American Badger	American Beaver	Black-tailed Jackrabbit	Bobcat	Coyote	Eastern Cottontail	Eastern Woodrat	Porcupine	Feral Pig	Flea	Gray Fox	Mountain Lion	Nutria	Raccoon	Red Fox	Striped Skunk	Swift Fox	Tick	Virginia Opossum	Total
Mitchell				1	16									3						**20**
Moore										7										**7**
Motley					13															**13**
Nolan				1	7				1											**9**
Ochiltree					1															**1**
Pecos			4	40	83			1	3		38			7		3				**179**
Potter			11		5	1												1		**18**
Presidio			8		3	2														**13**
Randall				1	4															**5**
Reagan																1				**1**
Reeves	1				5															**6**
Runnels					1															**1**
San Augustine		1																		**1**
Schleicher				6							1									**7**
Scurry	1			8	14		1							5					4	**33**
Sherman										2										**2**
Starr					17															**17**
Stephens					3				1											**4**
Sterling				24	38						17			21	6	3				**109**
Sutton				1	2						6			10						**19**
Swisher					1															**1**
Taylor					1											1				**2**
Terrell			2	16	16	2					47	3		6			1			**93**
Tom Green				4	1						15				1	2				**23**
Upton				1	10						14									**25**
Uvalde					4						1			1						**6**
Val Verde				26	6				1		66			17		1				**117**
Van Zandt											1									**1**
Victoria					17				2		1			1						**21**
Webb				1	66															**67**
Willacy					14															**14**
Williamson					24						2									**26**
Zapata					78									1						**79**
Zavala					3															**3**

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Total Negative	**6**	**3**	**27**	**205**	**1169**	**6**	**1**	**1**	**19**	**2**	**355**	**3**	**1**	**202**	**21**	**31**	**1**	**1**	**14**	**2076**