

2015 TEXAS PLAGUE SURVEILLANCE REPORT

Each year the Texas Department of State Health Services (DSHS), in conjunction with Texas AgriLife Extension/Wildlife Services and occasionally 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 characterized.

Plague in Humans

There were no reported human cases of plague in Texas during 2015.

Plague in Animals

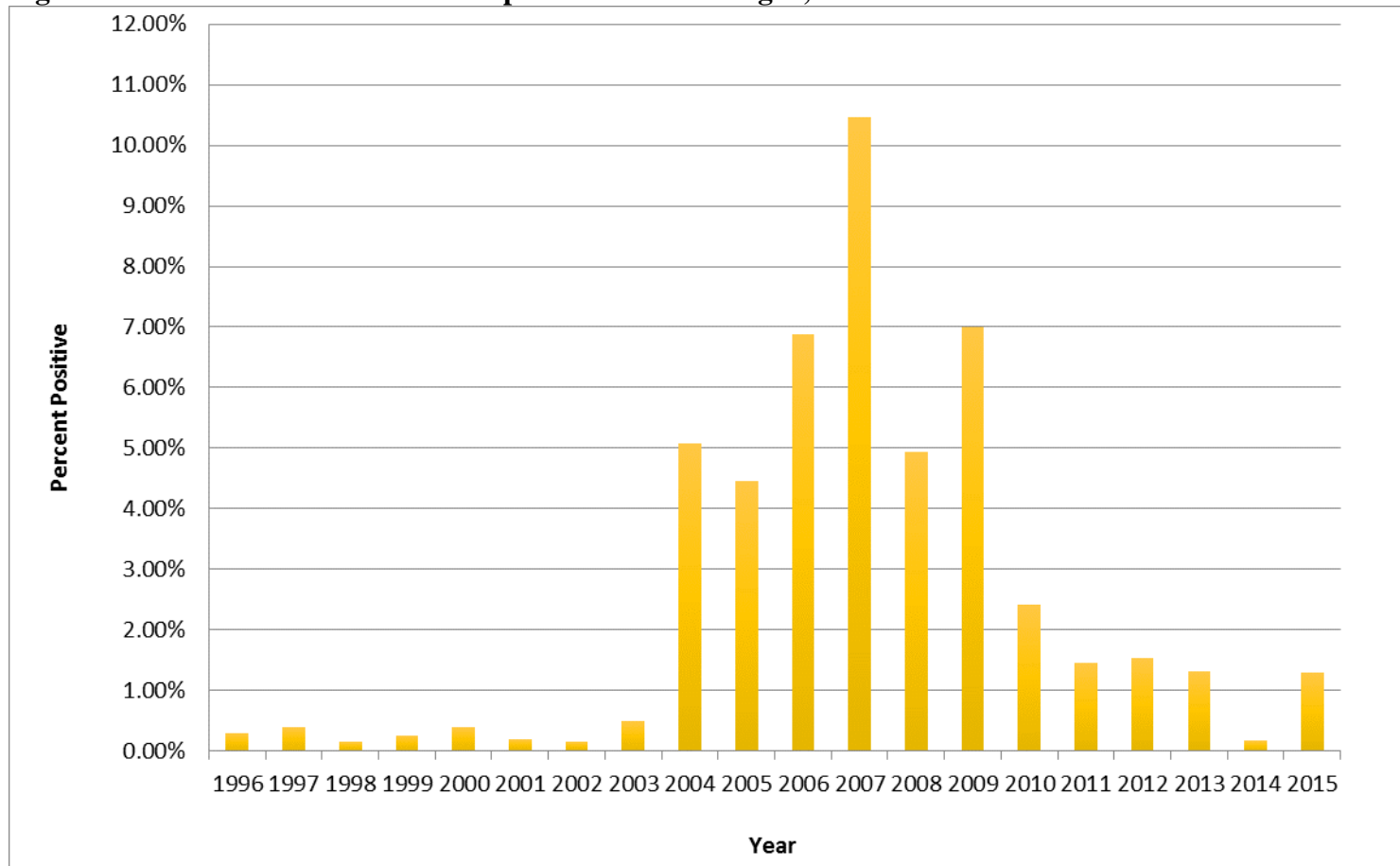
The DSHS Laboratory Services Section received submissions from 713 animals collected during calendar year 2015 from 84 counties, of which 615 from 78 counties were tested; 98 submissions were not tested due to specimen damage, insufficient specimen quantity, missing specimen, or limited supplies of laboratory reagents. Plague antibodies at a titer of $\geq 1:32$, which indicates probable exposure to *Y. pestis*, were reported for 8 samples (1.3% of all samples tested) collected from 3 counties (Table 1); 607 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, 2015

County	Result	Coyote	Gray Fox	Number Tested (County, All Species)	Percent Positive (County, All Species)
Bailey	1:32	2		14	42.9%
	1:64	1			
	1:256	2			
	1:512	1			
Kinney	1:32		1	26	3.8%
Webb	1:64	1		13	7.7%
Total		7	1	53	15.1%
Number Tested (Statewide)		470	119		
Percent Testing Positive		1.5%	0.8%		

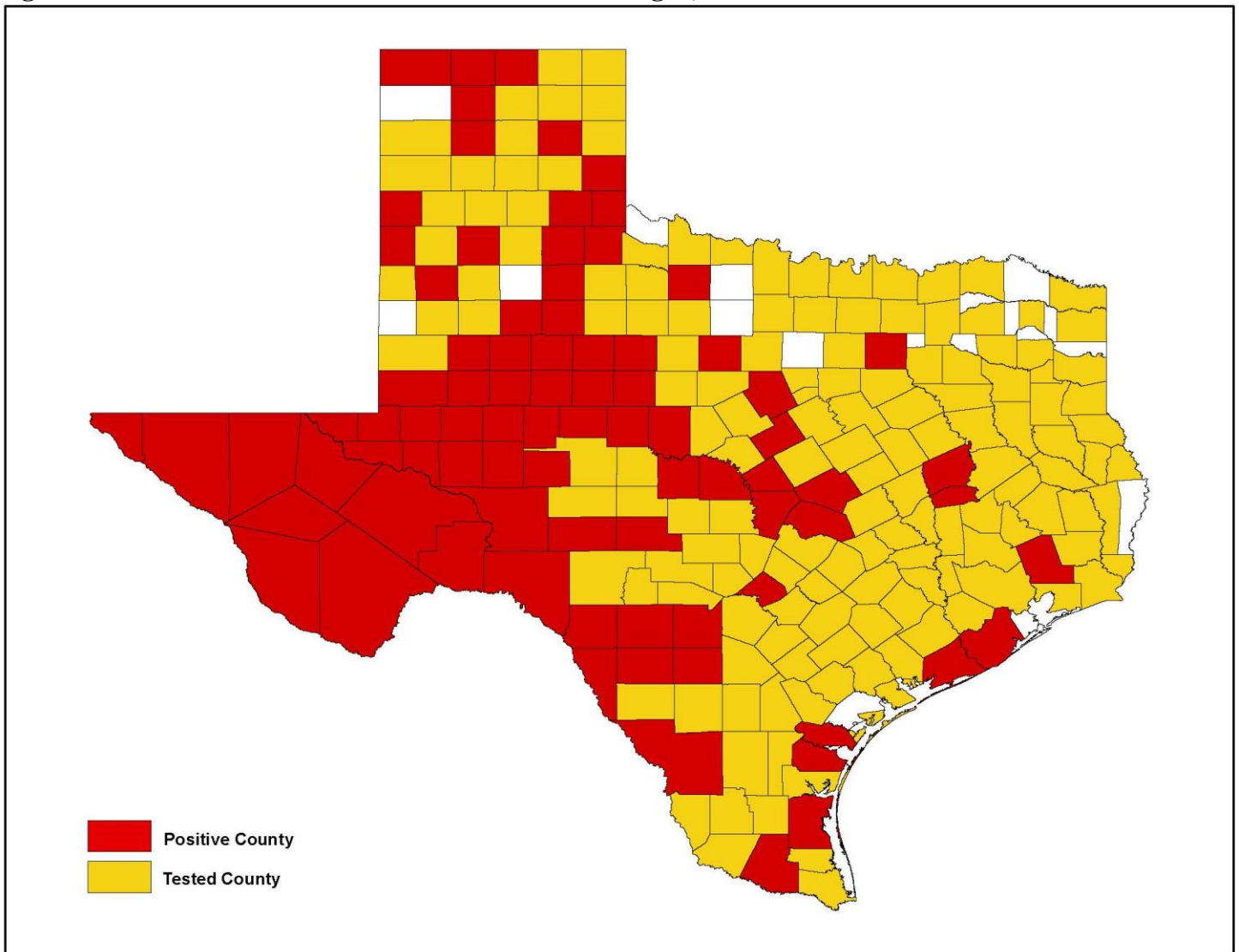
Comparing the percent of surveillance samples positive for plague during 2015 to the percent positive in the previous 19 years indicates a continuing decline in detected plague activity since 2010, following a notable increase for the 2004-2009 period (Figure 2). Factors such as climate, changing ecosystems, 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, 1996-2015



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 Tested and Counties Positive for Plague, 1976-2015



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 2015.

Table 2. Animals Negative for Plague by County, 2015

County	Bobcat	Coyote	Gray Fox	Raccoon	Red Fox	Total
Bailey		8				8
Bandera		1				1
Bell		1				1
Borden	1	13				14
Brazoria		2				2
Brewster		8	3			11
Burleson	1					1
Burnet	1					1
Calhoun		1				1
Chambers		5				5
Childress		5				5
Coleman			1			1
Collingsworth		3				3
Colorado		3				3
Comal		8				8
Concho			3			3
Coryell		2				2
Cottle		1				1
Crane		28				28
Deaf Smith		7				7
Dickens		2				2
Edwards		2		1		3
El Paso		3	11			14
Foard		2				2
Gillespie			6		1	7
Glasscock		11				11
Gregg		2				2
Hall		2				2
Hansford		20				20
Harris		1				1
Hays		14				14
Hemphill		2				2
Houston		4				4
Howard		2				2
Hudspeth		1				1
Jackson		1				1
Jefferson		16				16
Jim Hogg		6				6
Kendall			6			6
Kimble		7		4		11
King		2				2
Kinney		8	17			25

County	Bobcat	Coyote	Gray Fox	Raccoon	Red Fox	Total
Lampasas	1	25	3	7	1	37
Leon		3				3
Lipscomb		24				24
Lynn		4				4
Madison		2				2
Matagorda		11				11
Maverick		48				48
McCulloch			22			22
Milam		1				1
Mills		2				2
Motley		2				2
Ochiltree		7				7
Panola		3				3
Parmer		1				1
Pecos		14	8			22
Potter		3				3
Randall		26				26
Reagan		2				2
Real		3				3
Runnels		2				2
San Jacinto		2				2
San Saba		4	7			11
Scurry		8				8
Sherman		10				10
Sterling	2	3	1		1	7
Sutton		3	3	2		8
Terrell			8			8
Tom Green			1			1
Upton		1				1
Uvalde		2				2
Val Verde		7	17			24
Victoria	1	12	1	1		15
Webb		12				12
Wichita		1				1
Williamson		8				8
Zavala	1	3				4
Total	8	463	118	15	3	607