CHAPTER 3

CHAPTER 3

Animal Disease Eradication Programs and Control and Certification Programs

This chapter describes VS programs that are designed to eradicate, control, or prevent diseases that threaten the biological and commercial health of U.S. livestock and poultry industries. Disease surveillance is a critical component of these efforts, and this chapter also discusses the enhanced surveillance plans being developed for some program diseases to meet the third goal of the NAHSS strategic plan (described on page 7).

Eradication Programs

Diseases targeted in VS eradication programs include scrapie in sheep and goats, tuberculosis in cattle and cervids, pseudorabies and brucellosis in swine, and brucellosis in cattle and bison.

Scrapie in Sheep and Goats

Since 1952, VS has worked to control scrapie in the United States. In 2000, as a result of increasing industry and public concern about transmissible spongiform encephalopathies (TSEs) and the discovery of new TSE diagnostic and control methods, VS initiated an accelerated scrapie eradication program.

Current Program—The primary components of the scrapie eradication program are animal identification; surveillance; tracing of positive and exposed animals; testing of sheep and goats in exposed, infected, and source flocks; cleanup of infected and source flocks; and, certification of flocks.

Animal Identification—Identification of breeding sheep and culled breeding sheep is mandatory when ownership changes. The only sheep that do not have to be identified are those less than 18 months old moving in slaughter channels. Since 2004, the number of sheep and/or goat premises recorded in the scrapie national database, and the number of these premises that have requested official ear tags, have risen to 134,595 and 99,903, respectively, as of October 10, 2007 (table 3.1).

Surveillance—The Regulatory Scrapie Slaughter Surveillance (RSSS) program, initiated on April 1, 2003, is the primary surveillance method for scrapie in the United States. RSSS identifies scrapie-infected flocks through targeted slaughter surveillance of those sheep and goat populations recognized as having higher-than-average scrapie prevalence. These targeted higher-prevalence populations are defined as mature black- or mottle-faced sheep and any mature sheep or goats showing clinical signs that could be associated with scrapie, such as poor body condition,

TABLE 3.1: Scrapie national database—sheep and/or goat premises counts*

	9/30 2004	9/30 2005	9/30 2006	9/30 2007
Total	90,322	103,580	118,668	134,595
Requested official tags	64,040	73,807	96,755	99,903

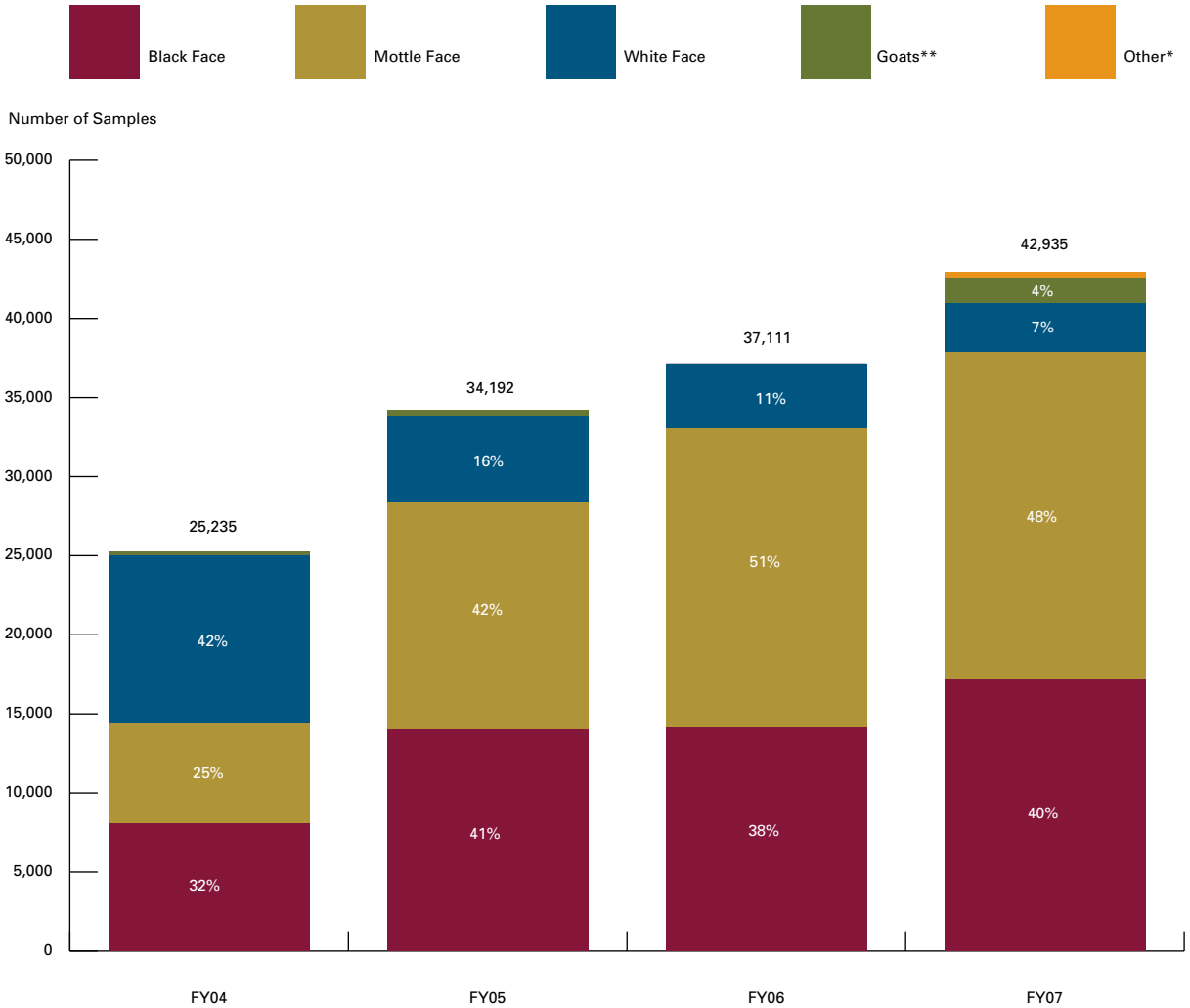
* In this database, a premises that contains both sheep and goats may be listed twice, once for each species.

wool loss, or gait abnormalities. Other than the targeted black-faced sheep and suspect animals, the RSSS program samples only animals with some form of identification. This includes USDA-approved eartags, electronic identification, backtags, and tattoos or lot identification. Identification allows for tracing scrapie-positive animals back to the farm of origin.

During FY 2007, as part of the RSSS program, 41,420 sheep and goat samples, collected from 80 slaughter plants in 22 States, were tested for scrapie using immunohistochemistry on brain and/or lymph node (table 3.2). Of the 42,935 sheep and goats sampled through RSSS and the Caprine Slaughter Prevalence Study (CSPS) described below, 48 percent were mottle-faced, 40 percent were black-faced, 7 percent were white-faced, 4 percent were goats, and 1 percent were unknown (fig. 3.1). Of the 59 sheep diagnosed as positive for scrapie, 46 were black-faced, 11 were mottle-faced, 1 was white-faced, and 1 was unknown. Of the 118 goats sampled and tested as part of the RSSS program in FY 2007, all were diagnosed as negative for scrapie.

In addition to RSSS, the CSPS was initiated in FY 2007 to determine whether the prevalence of scrapie in adult slaughter goats is less than 0.1 percent. In FY 2007, 1,515 goats were tested as part of this study; no positive animals have been found to date. The study will conclude in FY 2008 after a total of 3,000 adult goats have been tested.

FIGURE 3.1: Scrapie samples collected at slaughter FY 2004-07



*Includes sheep of unknown face color and goats for FY04-06 and sheep of unknown face color in FY07. Separation of goats in RSS starting in FY07.
**Includes goats collected through RSSS and CSPS.

***Tracing of positive and exposed animals*—**Under the scrapie eradication program, any animal confirmed to be positive for scrapie by USDA's NVSL is traced back to its flock of origin and, if different, flock of birth and any other flock in which it might have lambed. The flocks in which the animal lambed and the flock of birth are designated as infected and source flocks, respectively. Infected and source flocks are placed under movement restrictions until a flock cleanup plan has been completed. Any high-risk animals moved from these flocks before movement was restricted are also traced and tested.

***Testing of sheep and goats in exposed, infected, and source flocks (regulatory field cases)*—**In response to disease investigations, APHIS and State field Veterinary Medical Officers collect samples from flocks for scrapie testing. In FY 2007, 4,938 additional tests were conducted for scrapie, either on third-eyelid samples or on necropsy specimens. Rectal biopsy testing was also conducted on a portion of these animals to evaluate the suitability of the test for program use; this evaluation will be completed in FY 2008.

***Cleanup of infected and source flocks*—**In FY 2007, 76 previously undetected infected and/or source flocks were identified and 331 scrapie cases (330 sheep, 1 goat) were confirmed and reported by NVSL (tables 3.3 and 3.4). A scrapie case is defined as an animal diagnosed with scrapie by NVSL using a USDA-approved test (typically immunohistochemistry on the obex or a peripheral lymph node).

TABLE 3.2: Regulatory scrapie slaughter surveillance, by fiscal year

	FY 2004	FY 2005	FY 2006	FY 2007
Number of plants	34	78	72	80
Number of States	16	24	22	22
Number of samples tested	25,190	34,192*	37,111	41,420

* Number corrected from 2006 Animal Health Report.

In FY 2007, two field cases, one validation study case, and two RSSS cases were consistent with a variant of the disease known as Nor98 scrapie.[1] These five cases originated from flocks in California, Minnesota, Colorado, Wyoming, and Indiana, respectively.

TABLE 3.3: Flocks newly infected with scrapie

2004	2005	2006	2007
100	165	116	76

Footnote

1. Scrapie cases consistent with Nor98 have been identified in many countries since 1998, when the first case was described in Norway. Few flocks affected by Nor98 or Nor98-like scrapie yield additional positive sheep when flockmates are culled and tested. In contrast, depopulation and testing of genetically susceptible animals in flocks infected by classical scrapie commonly identifies 10 percent or more of the genetically susceptible animals as positive. Testing in the European Union has demonstrated that sheep of all commonly occurring genotypes can be infected with Nor98 or Nor98-like scrapie, including those that have historically proven resistant to the classical form of scrapie.

Scrapie susceptibility in sheep in the United States has been associated with two codons that encode for amino acids in the PrP protein. These codons are at positions 136 and 171, the latter of which is thought to be the major determinant of scrapie susceptibility in the United States. For all the scrapie-positive field cases with known genotypes in FY 2007, 100 percent were QQ at codon 171. Of these, 94.7 percent were AA at codon 136 and 5.3 percent were AV at codon 136. No cases were AVQR at codons 136 and 171 or VV at codon 136. The case from the validation study that was consistent with Nor98 was AARR at codons 136 and 171.

Certification of flocks—The Scrapie Flock Certification Program (SFCP) is a cooperative effort among producers, State and Federal animal health agencies, and industry representatives. Through the SFCP, an enrolled flock is certified if, during a 5-year monitoring period, no sheep in the flock are diagnosed with scrapie, no clinical evidence of scrapie is found in the flock, and no female animals from flocks of lower status are added to the flock. A separate category, known as "Selective Monitored" flocks, was designed for producers of slaughter lambs to allow scrapie surveillance in large production flocks. As part of the requirements for this category, an accredited veterinarian must inspect all cull ewes for clinical signs of scrapie before slaughter, and producers must submit for scrapie diagnosis a portion of the mature animals that are culled or die; the number of animals to submit is based on the flock size. A new category was added in 2007, the "Export Monitored" flock category. This category requires 7 years of monitoring, with a greater number of animals to be submitted for scrapie testing, to achieve the goal of meeting export certification requirements. Further details of the SFCP are available on the APHIS Web site at *www.aphis.usda.gov/animal_health/animal_diseases/scrapie/downloads/sfcp.pdf*.

Enrollment in the SFCP has increased since 2002 (table 3.5). At the end of FY 2007, 2,047 flocks were participating in the SFCP, including 5 flocks that had begun monitoring for the new Export Monitored flock category.

For the Future—Since the start of regulatory slaughter surveillance in FY 2003, the percentage of sheep found positive at slaughter has declined each fiscal year. Since FY 2005, the number of newly discovered infected and source flocks has also decreased each fiscal year, despite increased surveillance. To further these trends, continued efforts will be made to enhance the traceability of sheep and goats presented for sampling and to expand surveillance into underrepresented areas.

TABLE 3.4: Scrapie cases, FY 2003-07

Test or examination	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
	(Number of cases)				
Necropsy	315	374	461	243	253
Regulatory third eyelid	32	20	31	37	13
Regulatory Scrapie Slaughter Surveillance	[1]23	86	106	70	59
Total	370	480	598	350	[2]331

[1] Includes only part of the FY 2003 (April 1–September 30, 2003).
[2] Includes six additional cases found as part of the third-eyelid validation study.

TABLE 3.5: Scrapie Flock Certification Program participation, 2002–07

Fiscal year, as of 9/30	Total Partici-pating Flocks	Status		
		Enrolled	Certified	Selective Monitored
2002	1,539	1,452	78	9
2003	1,776	1,663	105	8
2004	1,868	1,726	135	7
2005	1,961	1,770	188	3
2006	2,027	1,727	297	3
2007	2,047*	1,611	427	4

* Includes five additional flocks from the Export Monitored category.

Tuberculosis in Cattle and Cervids

In the 1800s and early 1900s, bovine tuberculosis (TB) presented a significant health risk to people and caused considerable losses in the cattle industry. Initially implemented in 1917, the Cooperative State-Federal Tuberculosis Eradication Program reduced TB prevalence to very low levels by the 1990s, but eradication has proven difficult.

Current Program—In the current eradication program, States, zones, or regions are classified into five categories based on prevalence of TB in cattle and bison herds (table 3.6), as specified in 9 CFR 77. The publication "Bovine Tuberculosis Eradication: Uniform Methods and Rules" gives the minimum standards adopted and approved by the VS Deputy Administrator on January 20, 2005. It can be accessed at *www.aphis.usda.gov/vs/nahps/tb/tb-umr.pdf*. To retain or improve their status, States, zones, or regions must comply with reporting requirements (annually for Accredited Free and Modified Accredited Advanced, semiannually for Modified Accredited and Accredited Preparatory).

In addition, surveillance is conducted through testing of suspicious granulomas collected at slaughter establishments and tuberculin skin testing of live cattle.

2006–07 Program Status—In FY 2007, the number of cattle herds found to be TB affected decreased relative to the previous year. In FY 2007, seven affected herds, including one affected cervid herd, were found, a decrease from nine affected herds in FY 2006. Two of these seven herds were located in Michigan; one was detected through annual testing; and, a captive cervid herd was detected through inspection of a hunter-killed deer. Two herds were located in Minnesota; one herd was detected through area testing; and, the other through retesting of a high-risk herd. Oklahoma, Colorado, and New Mexico each had one affected herd; these three herds were detected through slaughter surveillance.

One TB-affected herd was detected in California in FY 2008 (December 2007); although this situation is described briefly below, the herd is not included in the report above for FY 2007, and California's status has not changed.

At the end of 2007, 49 U.S. States (including Michigan's Upper Peninsula and part of New Mexico), Puerto Rico, and the U.S. Virgin Islands were considered Accredited TB Free (table 3.6). Minnesota, part of Michigan's Lower Peninsula, and part of New Mexico were classified as Modified Accredited Advanced, and 11 counties plus portions of 2 other counties in northern lower Michigan were Modified Accredited. Specific information for 2007 for affected States follows.

TABLE 3.6: Tuberculosis accreditation categories and State status—2007

Category	Prevalence of TB	States (numbers as of 12/31/07)
Accredited Free	Zero for cattle and bison	49 U.S. States, Michigan's Upper Peninsula, most of New Mexico, all of Puerto Rico, and the U.S. Virgin Islands
Modified Accredited Advanced	Less than 0.01 percent of total cattle and bison herds for each of recent years	Minnesota, part of Michigan's Lower Peninsula, and part of two counties in eastern New Mexico
Modified Accredited (Regionalized)	Less than 0.1 percent of the cattle and bison herds	11 counties in northern Lower Michigan and parts of 2 other counties
Accredited Preparatory	Less than 0.5 percent of the total number of cattle and bison herds	—
Nonaccredited	Either unknown or 0.5 percent or more of the total number of cattle and bison herds	—

Colorado—For the first time since 1974, a TB case was detected in a Colorado cattle herd. The infected herd produced beef and rodeo event cattle. The index case, a rodeo bull undergoing routine slaughter inspection, had last resided in the infected herd about 2 years prior to going to slaughter. Traceback investigations detected another infected rodeo bull on that premises, and the herd was depopulated. No other infected cattle were found in the index bull's most recent herd of residence, and this herd was declared to be not infected. Epidemiological tracing led to the quarantine and testing of 5 Colorado herds, totaling nearly 700 cattle. In all, there were 96 tracebacks of exposed cattle in 24 States. All quarantines have now been lifted without evidence of TB spread to other herds in Colorado or other involved States. Colorado's TB-free status was not affected because the infected herd was depopulated, and no further evidence of infection was detected.

Michigan—Two new affected herds were detected in FY 2007; of these, one was a beef herd, and one was a captive wild cervid herd. Both herds were depopulated. Annual herd testing is ongoing in the Modified Accredited Zone. The prevalence of TB in wild deer in the Modified Accredited Zone was 2.3 percent in 2006.

Two dairy herds, classed as "carryover herds" from FY 2004, are under test-and-removal herd plans. Both of these herds were detected through area (annual surveillance) testing.

Minnesota—In FY 2007, two TB-positive beef herds were detected and depopulated in Minnesota; these were found through area testing and retesting of a designated high-risk herd. In January 2006, Minnesota's status had been reduced to Modified Accredited Advanced from Accredited Free.

As part of its TB management plan, Minnesota completed enhanced statewide surveillance of 1,500 cattle herds and wild white-tailed deer in 2007. No infected cattle or deer were found outside the high-risk area in northwestern Minnesota. In 2007, 11 positive wild white-tailed deer were identified from the high-risk area in northwestern Minnesota.

New Mexico—An affected dairy herd in the Accredited Free portion of New Mexico was detected through slaughter surveillance in 2007. This herd, which consisted of more than 12,000 cattle on 2 premises, has been depopulated. The herd had tested negative for TB in 2004, so cattle purchased after 2004 were the most likely source of the infection. Epidemiological investigation led to a total of 907 tracebacks, involving more than 5,981 exposed animals. TB testing was performed on 22 exposed beef and dairy herds in New Mexico, consisting of 35,821 animals. To date, no other infected herds have been found.

New Mexico's TB status did not change. New Mexico is divided into two zones; portions of two counties in eastern New Mexico are classified as Modified Accredited Advanced status, and the remainder of the State continues to be TB Accredited Free.

Oklahoma—One TB-infected beef herd was detected through slaughter surveillance in Oklahoma in 2007. Two additional infected animals were subsequently detected from this herd (one adult and one feedlot steer), and the herd was depopulated. Twelve herds adjacent to the infected herd were tested for TB, and no infected animals were found. Epidemiological investigation revealed a total of 43 potentially exposed herds, consisting of 893 animals in 4 States. The investigation for potential sources of the infection involved 896 animals in 6 States. To date, no other infected herds have been identified.

Before this, bovine TB was last reported in Oklahoma in 1982, and the State has been classified by USDA as TB-Accredited Free since 1996. Oklahoma's TB-Free status was not affected because the infected herd was depopulated, and no further evidence of infection was disclosed.

California—In December 2007, a case of bovine TB detected at a slaughter plant in California led to identification of an infected California dairy herd. The herd is being depopulated. As of April 1, 2008, 66 dairy herds in California and other States had been identified as receiving exposed

cattle from the index, infected herd, and all were in the process of being investigated for evidence of disease spread. At that time, 35 additional dairies in California were being tested to evaluate whether they could have been the initial source for the infection.

Slaughter Surveillance—In FY 2007, 24 cases of *Mycobacterium bovis* were found at slaughter, a decrease from 28 cases the year before (table 3.7). Six cases occurred in adult cattle, and the remaining 18 cases occurred in feedlot cattle. The national granuloma submission rate for adult cattle for FY 2007 was 16.6 submissions per 10,000 adult cattle killed, exceeding the target rate of 5 submissions per 10,000 adult cattle killed.

Of the six cases occurring in adult cattle, three led to the detection of one affected herd per State in Oklahoma, Colorado, and New Mexico (described above). Two adult-cattle cases were traced back to South Dakota beef herds, and one case was traced to a New Mexico dairy, but no additional infection was found.

Of the 18 *M. bovis* cases identified in feedlot steers by slaughter surveillance, 17 (94 percent) involved Mexican steers. One case in a feedlot steer traced back to the affected Oklahoma herd.

TABLE 3.7: Slaughter surveillance

		Granuloma submissions	
FY	*M. bovis* cases	Total submissions[1]	Number per 10,000 adult cattle slaughtered
2004	35	6,367	9.3
2005	40	9,439	16.2
2006	28	[2]9,565	[2]16.4
2007	24	10,286	16.6

[1] Primarily from adult cattle.
[2] Numbers changed from 2006 Animal Health Report to reflect updated data.

Cervids—One TB-infected captive wild-cervid herd was found in 2007. This herd, in Michigan, was detected through inspection of hunter-killed deer from the premises, and the herd was depopulated. During 2004, a working group of State and Federal personnel developed a surveillance plan for captive cervids that was presented to, and conditionally approved by, cervid industry leadership. This input was incorporated into a draft of the Uniform Methods & Rules (UM&R) document specifically for captive Cervidae, the first such document for captive cervids. This document has been under revision, and a final UM&R is expected to be published after 2008.

For the Future—In a collaboration critical to the successful eradication of TB in both the United States and Mexico, VS officials continue to work with their Mexican counterparts to help them move the Mexican TB eradication program forward. The goal is to significantly reduce the risk of importing TB-infected and -exposed Mexican animals into the United States. In 2007, a 5-year plan, "Strategic Plan for Reducing the Risk of Importing Tuberculosis Infected Cattle from Mexico 2008-2012," was developed and presented to Mexican representatives; discussions are proceeding. The plan requires that the Mexican TB Eradication Program achieve equivalency with the U.S. program by the end of 2012. VS and APHIS International Services cooperate to conduct program reviews in Mexican states in order for USDA to recognize their status for the purposes of importation. During FY 2007, USDA conducted reviews in seven states or zones. Currently, 20 Mexican states and zones have TB programs that are equivalent to the U.S. TB program, and therefore only these regions are allowed to export cattle to the United States.

In 2008, a 5-year research project titled "Controlling Wildlife Vectors of Bovine Tuberculosis," nears completion. This collaborative project between Wildlife Services (WS) and VS, conducted primarily by WS' National Wildlife Research Center, addresses activities that are required to achieve TB eradication. These include defining species susceptibility, transmission routes, and interactions among wildlife and between

wildlife and cattle; developing effective and economical barriers to reduce interaction between wildlife and cattle; and, developing vaccines and delivery systems for deer and possibly other wildlife.

Pseudorabies in Swine

In the 1970s, a virulent strain of pseudorabies virus (PRV) caused concentrated outbreaks in the Midwest. Consequently, the Livestock Conservation Institute (now the National Institute for Animal Agriculture) set up a task force in the 1980s that defined two State stages, relative to disease status, and established the National Pseudorabies Control Board to oversee the stages and determine the status of each State. In 1989, APHIS published program standards for a plan to eradicate pseudorabies from commercial swine production by 2000. By 1999, the U.S. infection rate was down to less than 1 percent of all swine herds (about 1,000 herds), and the Accelerated Pseudorabies Eradication Program was established. The goal of the program was to remove the last infected domestic commercial herds, through depopulation, by the end of 2004.

Current Program—The National Pseudorabies Eradication Program, conducted in cooperation with State governments and swine producers, had eliminated pseudorabies from domestic commercial herds in all States, Puerto Rico, and the U.S. Virgin Islands by the end of 2004. As documented in the Pseudorabies Program Standards, which can be viewed at *www.aphis.usda.gov/animal_health/animal_diseases/pseudorabies/downloads/pseuumr.pdf*, program measures are based on prevention, vaccination (now largely discontinued), disease surveillance, and eradication. Primary program activities include surveillance, herd certification, and herd cleanup. These are minimum standards developed by VS and endorsed by swine health practitioners and State animal health officials in cooperation with USAHA. Active surveillance components include testing market and cull swine, breeding animals being moved between States, imported breeding swine, and feral and transitional swine being moved. Transitional swine are defined as captive feral swine or domestic swine in contact (or potentially in contact) with feral swine. The program also has passive and outbreak surveillance components. If an infected swine herd is identified, pseudorabies is eliminated through complete depopulation.

There are five stages in the eradication program, beginning with a preparatory phase and culminating in the pseudorabies-free stage V. Since 2004, each State is required to file a Feral–Transitional Swine Management Plan that outlines its plans for dealing with PRV threats from feral swine.

Program Status—In FY 2007, all 50 States, Puerto Rico, and the U.S. Virgin Islands filed annual reports with VS' National Center for Animal Health Programs' swine staff for review by the PRV-control board as part of the status renewal process. These filings were analyzed to ensure that testing of the breeding herd population was adequate and that the Feral-Transitional Swine Management Plan was complete, as required by pseudorabies program standards.

As of December 31, 2007, there were no known domestic production swine herds infected with PRV in the United States. Nationally, 14 transitional herds were disclosed through surveillance as infected with PRV during FY 2007. All herds were depopulated promptly. Complete epidemiological investigations of all cases disclosed no evidence that infection had spread from the infected transitional herds to any contact herds. Exclusion plans are part of good biosecurity protocol on most commercial production farms, and extensive surveillance activities over the past 3 years suggest that no commercial production farms have been infected.

Pseudorabies Surveillance Plan—Although pseudorabies has been eradicated from commercial production swine, it is still endemic in feral swine and can be found occasionally in transitional swine herds. The distribution of feral swine continues to expand, with an estimated 3 million to 4 million feral swine now located in at least 35 States. Reintroduction of PRV into commercial swine herds would most likely occur via either direct exposure to free-roaming feral hogs, indirect exposure to wild

boars at hunting clubs, or exposure to transitional swine infected by feral swine.

In 2007, a comprehensive surveillance plan for PRV, specifically for rapidly detecting PRV introduction into commercial swine, was completed. The plan is based on several surveillance activities. First is a passive surveillance system for reporting suspicious cases. Second is surveillance at veterinary diagnostic laboratories of submissions that feature high mortality in pigs, central nervous system symptoms in suckling pigs, abortions, and other signs of reproductive failure. In addition, serum samples submitted to five targeted swine diagnostic laboratories will be selected from respiratory disease cases or from serum routinely submitted for sero-profiling.

Herds shipping swine interstate from counties with feral swine will be identified and periodically sampled based on risk of exposure to feral swine. On-farm PRV testing will be conducted in response to reported direct exposure of domestic swine herds to feral swine. Direct exposure is defined as physical contact (feral swine that have gained access to the swine facilities or pens) or fenceline contact (feral swine spotted along the fence).

Other objectives of PRV surveillance include monitoring the distribution of the feral swine populations relative to domestic swine populations at risk of exposure (i.e., outdoor production sites). Also, data mining of electronic information sources will help to rapidly identify and analyze information related to PRV outbreaks in other countries.

For the Future—Efforts are underway to update the pseudorabies program standards to align with the revised surveillance standards. Furthermore, PRV surveillance activities are being integrated with existing swine surveillance activities, such as those for CSF. For example, as part of an APHIS collaborative effort to monitor feral swine for CSF (described on page 17), APHIS-WS also will continue to monitor feral swine populations for PRV.

Brucellosis in Swine

In the United States, porcine brucellosis, caused by *Brucella suis*, led to considerable economic loss from the 1920s to the 1950s. Since then, changes in management combined with regulatory programs to eradicate the disease have gradually eliminated brucellosis as a major disease problem from large areas of the country.

Current Program—Current brucellosis eradication program activities in the United States are a joint State, Federal, and livestock industry effort. The program is administered, supervised, and funded by cooperative efforts between State and Federal animal health regulatory agencies. Livestock industries are represented on advisory committees that ultimately advise changes in the UM&R for brucellosis eradication, the working guidelines for conducting the program. For details, see *www.aphis.usda.gov/animal_health/animal_dis_spec/swine/downloads/sbruumr.pdf*

Establishment and maintenance of validated brucellosis-free herds, especially herds selling breeding stock, are integral to the swine brucellosis eradication program. Surveillance programs, such as identification and testing of market sows and boars, have located large numbers of infected herds and led to their elimination.

When a herd is classified as infected with *B. suis,* one of three alternative plans is recommended, depending on the circumstances. Plan 1 entails depopulating the entire herd, which is the most successful and economical approach. Plan 2 is designed to salvage irreplaceable bloodlines and basically consists of marketing the adult pigs for slaughter and retaining weanling pigs for breeding stock; this plan is not always successful and necessitates considerable isolation and retesting. Plan 3, rarely successful, involves removing only serologic reactors and retesting the herd as many times as necessary. This is the approach of choice for a herd with few reactors, in which there is reasonable doubt that brucellosis exists in the herd.

The swine brucellosis eradication program now recognizes that *B. suis* infection will continue to exist indefinitely in feral swine and associated transitional swine populations. As described previously,

transitional swine are defined as captive feral swine or domestic swine in contact (or potentially in contact) with feral swine. Efforts are now concentrated on effective separation of commercial production swine from transitional and feral swine, with adequate surveillance and testing of at-risk populations to ensure compliance. As part of the Feral–Transitional Swine Management Plan that each State must file for the Pseudorabies Eradication Program (described previously in this chapter), each State will also address swine brucellosis infection threats from feral swine populations.

Program Status—As of December 31, 2007, all States and U.S. territories, except Texas, remained in stage III (free) status of the Swine Brucellosis Control and Eradication Program, and there were no known commercial production swine herds infected with swine brucellosis in the United States. For several years, all outbreaks of infection in transitional herds, including those in Texas, have been attributed to feral swine exposure. Texas will likely achieve free status in 2008.

During FY 2007, 11 swine brucellosis infections were identified in transitional herds; one of these was a mixed PRV and swine brucellosis infection. Animal health officials traced animal movements in all cases, failing to detect any evidence of spread from the infected herds to contact transitional or commercial swine herds. Exclusion plans remain vital in preventing or minimizing contact between domestic and feral swine.

For the Future—Swine brucellosis will be included in comprehensive swine surveillance. As with PRV, the biggest challenge to eliminating swine brucellosis continues to be the sporadic appearance of infection in feral pigs and transitional herds that are exposed to feral swine. Vigorous surveillance is integral to protecting the commercial swine population. As part of the APHIS collaborative surveillance effort for feral swine (described on page 114), WS will continue to monitor feral swine populations for *B. suis*.

Brucellosis in Cattle and Bison

The brucellosis program initially began in 1934 with the goal of controlling brucellosis in domestic livestock herds in the United States. In 1954, this goal shifted to eradication when Congress formally appropriated funds for a national eradication program, launching the Cooperative

TABLE 3.8: Brucellosis certification categories and State status—as of Dec 31, 2007

Designation	Infection rate	No. States with designation
Class Free	No domestic cattle or bison herds found to be infected for 12 consecutive months while under an active surveillance program	49 States, Puerto Rico, U.S. Virgin Islands
Class A	Herd infection rate less than 0.10 percent. (1 herd per 1,000)	1 (Texas)*
Class B	Herd infection rate between 0.10 percent and 1.0 percent	0

*Class Free application for Texas is pending final approval.
Note: States or Areas not having at least Class B status are considered "No Status."

State-Federal Brucellosis Eradication Program. A cooperative effort among Federal and State animal health officials and livestock producers, the program is designed to eliminate brucellosis from the U.S. domestic livestock population. The primary motivation for brucellosis eradication is the economic benefit, including increased trade opportunities, to the cattle industry and consumers of its products. Another important reason for eradication is to eliminate the public health threat posed by brucellosis, a zoonotic disease. (Zoonotic diseases are transmissible from animals to humans.)

Current Program—The brucellosis eradication program is based on active surveillance by each State of domestic cattle and bison herds. The program's UM&R document sets forth minimum standards for States to achieve eradication and conduct continued surveillance. For details, see *www.aphis.usda.gov/animal_health/animal_diseases/brucellosis/downloads/umr_brucellosis.pdf*.

States are designated as Class Free status—that is, free of brucellosis—when no domestic cattle or bison herds in the State are found to be infected during a period of 12 consecutive months while under an active surveillance program. Restrictions on moving cattle interstate become less stringent as a State approaches or achieves Class Free status. Maintaining brucellosis State status focuses on continual surveillance activities. Surveillance for bovine brucellosis is conducted primarily through the Market Cattle Identification (MCI) program and the Brucellosis Milk Surveillance Test (BMST). Each State is required to maintain surveillance at certain levels to maintain its brucellosis State status (table 3.8).

The program does allow a Class Free status State to maintain status if a brucellosis-affected herd is disclosed, provided certain provisions are met. Program regulations stipulate that, if a single affected herd is found in a Class Free State, the State may retain its Class Free status if it satisfies two conditions within 60 days of the identification of the affected animal. First, the affected herd must be immediately quarantined, tested for brucellosis, and depopulated as soon as practicable. Second, an epidemiological investigation must be performed, and the investigation must confirm that brucellosis has not spread from the affected herd. All adjacent herds, source herds, and contact herds must be epidemiologically investigated, and each of those herds must receive a complete herd test with negative results.

Program Status—As of December 31, 2007, 49 States, Puerto Rico, and the U.S. Virgin Islands were officially declared free of brucellosis (table 3.8). Texas was the last remaining Class A status State at the end of 2007; it had achieved Class A State status in August 1994. By mid-2007, Texas demonstrated it met all requirements to advance in status and formally applied for reclassification as a Class Free State. Idaho, formally downgraded from Class Free status to Class A status in January 2006 after the disclosure of two brucellosis-affected cattle herds within a consecutive 12-month period, formally regained Class Free State status in July 2007. Specific 2007 information for affected States follows.

***Montana*—**In May 2007, one brucellosis-affected cattle herd was disclosed in the State of Montana, detected by a test of animals intended for interstate movement. (Previously, Montana had been classified as Brucellosis Class Free since June 1985.) One animal with elevated titer for brucellosis was identified, and samples were sent to NVSL for culture. Bacteriologic culture results from the initial reactor animal revealed *Brucella abortus* Biovar 1.

TABLE 3.9: Number of cattle tested for brucellosis (million head)—2004-07

		MCI Program		
FY	Total	Farm/ ranch	Slaughter plants	Markets
2004	9.1	0.8	5.5	2.8
2005	8.7	0.6	5.2	2.9
2006	8.8	0.9	4.7	3.2
2007	8.8	0.8	4.7	3.3

Upon the initial identification of the reactor cow, her herd of origin was identified and tested, disclosing six additional reactor animals. The affected herd was held under quarantine and depopulated with indemnity in mid-July 2007. In addition, all adjacent herds, potential source herds, contact herds, and area herds were tested and placed on herd plans within the required 60-day period. Approximately 3,200 head of cattle in about 25 herds were tested as part of the epidemiological investigation. No additional brucellosis-affected herds were disclosed.

The affected herd had been in existence for less than 3 years. The herd's main source of cattle, including the index animal, was a ranch located close to Yellowstone National Park with numerous elk (a wildlife reservoir species in this area) overwintering on it each year. The index cow aborted about a month after arriving at the new premises, which is farther from Yellowstone. Also, very few elk had been seen on the new premises.

Montana successfully completed the required affected-herd depopulation and epidemiological investigation, including all required testing, within 60 days, thereby meeting all requirements to maintain Class Free State classification.

Texas—No new brucellosis-affected cattle herds were disclosed in Texas during 2007. Throughout 2007, Texas diligently maintained brucellosis surveillance activities while conducting an in-house review of previous brucellosis-affected herd investigations and high-risk areas. First-point testing was a key component of brucellosis surveillance in Texas. Upon completing its self-assessment, Texas formally applied to advance to Class Free State status in June 2007. A pre-Class Free review conducted in Texas during summer 2007 evaluated the State's brucellosis program to confirm that all requirements to advance to Class Free State status had been met. At the end of 2007, regulatory activities to advance Texas to Class Free State status were in progress.

Idaho—After successfully completing all program regulatory requirements, Idaho successfully regained Class Free State status on July 23, 2007. Idaho had initially attained Class Free State status in February 1991; however, after two brucellosis-affected herds were disclosed in November 2005, Idaho's status was downgraded to Class A State status in January 2006.

Maintaining brucellosis State status focuses on continual surveillance activities. As previously noted, the two primary surveillance activities conducted for bovine brucellosis are MCI testing and BMST. During FY 2007, APHIS tested approximately 7.995 million head of cattle under the MCI surveillance program. Brucellosis program standards require testing a minimum of 95 percent of all test-eligible slaughter cattle. In FY 2007, 96.4 percent of all test-eligible slaughter cattle were tested. First-point testing at livestock markets is required in Brucellosis Class A States. Several Brucellosis Class Free States continue to conduct first-point testing at markets to facilitate interstate movement of cattle and enhance surveillance activities. Brucellosis program standards require a minimum of 90 percent successful traceback of all MCI reactor cattle and a minimum of 95 percent successful case closure. In FY 2007, about 97.9 percent of all MCI reactors were successfully traced and investigated, resulting in successful case closures. About 835,200 additional head of cattle were tested on farms or

TABLE 3.10: Brucellosis Milk Surveillance Test (BMST) results 2004-07

FY	Number of tests	Number suspicious on screening	Number of positive
2004	184,000	200	0
2005	171,000	200	0
2006	164,000	186	0
2007	142,000	126	0

*Estimates based on the number of dairy herds in 2003-04 and State's success in meeting brucellosis ring test sampling requirements.

ranches during FY 2007, bringing the total cattle tested for brucellosis in FY 2007 to 8.8 million head (table 3.9).

BMST surveillance is conducted in all commercial dairies a minimum of two times per year in Class Free States and a minimum of four times per year in Class A States. Suspicious BMST results are followed up with an epidemiological investigation. According to herd inventory data detailed in individual State annual reports, there were about 62,500 dairy operations in the United States in FY 2007. Approximately 142,700 BMSTs were conducted in FY 2007, and about 126 of those tests yielded suspicious results after repeat screening (repetitive brucellosis ring test and/or heat inactivation ring test). All suspicious BMST results in FY 2007 were confirmed negative by subsequent epidemiological investigations and additional herd testing (table 3.10).

Approximately 4.212 million calves were vaccinated for brucellosis in FY 2007. The national calfhood vaccination policy recommends proper calfhood vaccination in high-risk herds and areas and whole-herd adult vaccination when appropriate in high-risk herds and areas. The vaccination policy also recommends elimination of mandatory vaccination in all States.

Bovine Brucellosis Surveillance—A Brucellosis Surveillance Planning Working Group, composed of 4 State veterinarians and 14 other members, was convened in FY 2007 to modify the brucellosis surveillance plan. The revised plan is based on the findings and recommendations of the National Surveillance Unit's FY 2006 evaluation of current bovine brucellosis program surveillance activities. The draft plan is designed to improve the efficiency and effectiveness of the national brucellosis surveillance program by eliminating redundancies in brucellosis surveillance testing and addressing imbalances in surveillance in lower-risk States. Proposed changes to brucellosis surveillance include reducing slaughter surveillance, eliminating the brucellosis ring test, and eliminating Federal funding for first-point testing in lower-risk States where it is not required. The working group held discussions with key industry partners and members of the National Assembly of State Animal Health Officials to better understand impacts and concerns relative to changes in brucellosis surveillance activities.

A Brucellosis Laboratory Consolidation/ Regionalization Planning Workgroup, consisting of State and Federal animal health officials and laboratory personnel, was convened in FY 2007. This committee was tasked with drafting a proposal for a regional brucellosis laboratory concept for brucellosis surveillance testing. The objectives are to increase the cost efficiencies of brucellosis surveillance testing while maintaining testing effectiveness and timely reporting of test results. The proposal includes developing and implementing plans to consolidate the current 44 brucellosis laboratories into 14 regional laboratories. The Brucellosis Laboratory Consolidation/Regionalization Planning Workgroup continues to collaborate with States to refine appropriate laboratory selection and funding criteria. Standardization of brucellosis diagnostic testing methodology is another part of the consolidation effort.

Brucellosis Activities Related to the Greater Yellowstone Area—The only known remaining reservoir of *Brucella abortus* infection in the Nation is in wild bison and elk in the Greater Yellowstone Area (GYA). APHIS continues to cooperate with State and Federal agencies— the U.S. Department of the Interior, and the States of Idaho, Montana, and Wyoming—on an Interagency Bison Management Plan (IBMP) for Yellowstone National Park bison. The goal of the IBMP is to maintain wild, free-ranging bison and elk herds while controlling brucellosis in the GYA and minimizing the risk of transmitting the disease from the Park's bison to domestic cattle on public and private lands in Montana, adjacent to Yellowstone National Park.

The cooperating agencies made several adaptive management changes for 2007. These include strategic hazing on some public lands, increased tolerance of bison bulls in some areas during certain times of the year, bison hunting in some areas, and

a clarification that the 3,000 bison or elk population number is a trigger for management decisions rather than a Yellowstone National Park population objective or target. Adaptive management changes for operations in the IBMP can be made with the concurrence of all of the IBMP cooperating agencies.

When requested by the States, APHIS is cooperating with, and assisting the GYA States in, the development and implementation of herd plans for individual livestock herds in the GYA. These plans will address concerns about brucellosis transmission from wild bison and elk to domestic livestock and provide suggested mitigation measures to prevent transmission. Also at State request, APHIS is consulting and cooperating with State wildlife agencies in their development of herd-unit management plans for wild elk and bison.

Idaho completed and implemented herd plans in 2006. Montana has completed its survey of livestock herds in the GYA and is performing a risk analysis of the individual livestock herds to determine management actions for inclusion in the individual livestock herd plans. Montana is also reviewing its elk herd unit plans. Wyoming has a larger number of livestock herds and elk units in the area of concern but is currently surveying livestock herd owners and developing individual livestock herd plans. Wyoming has completed individual elk herd plans for the nine involved elk herd units and is continuing statewide elk herd brucellosis surveillance based on hunter-collected blood samples.

Additionally, APHIS has assisted Wyoming with funding to vaccinate elk on elk feeding grounds in an effort to reduce the prevalence of brucellosis. APHIS has also provided funds for habitat improvement to keep elk dispersed and away from cattle and feeding grounds. Efforts are continuing to develop new, safe, and more effective brucellosis vaccines as well as vaccine delivery systems for bison and elk.

For the Future—Controlling brucellosis in the free-ranging elk and bison populations in the GYA is integral to protect the national livestock population against outbreaks of the disease. Some of the ongoing projects to mitigate the threat of brucellosis from free-ranging bison and elk in the GYA to livestock in surrounding States are described below.

- Wyoming is continuing a 5-year pilot project focused on test and removal of brucellosis-seropositive elk at the Muddy Creek feedground. Initiated in 2006, this project will provide data to help evaluate whether test and removal will significantly reduce brucellosis seroprevalence in those elk herds.

- The multiagency Bison Quarantine Feasibility Study (BQFS) is continuing efforts to evaluate quarantine procedures and determine whether it is possible to certify individuals or groups of bison as free from brucellosis, including latent infection. Bison that remained test negative after the first phase of the BQFS advanced into the second phase. During this phase, the animals enter quarantine protocols and are bred to determine whether and how latent brucellosis infection is expressed during the stress of pregnancy. If latent infection does not become evident at parturition, some cows and their calves should be eligible for release into fenced pasture for continued surveillance at the site of intended future full release.

Control and Certification Programs

VS control and certification programs include chronic wasting disease (CWD) in cervids, Johne's disease in cattle, trichinae in swine, and the Swine Health Protection Inspection Program.

Chronic Wasting Disease in Cervids

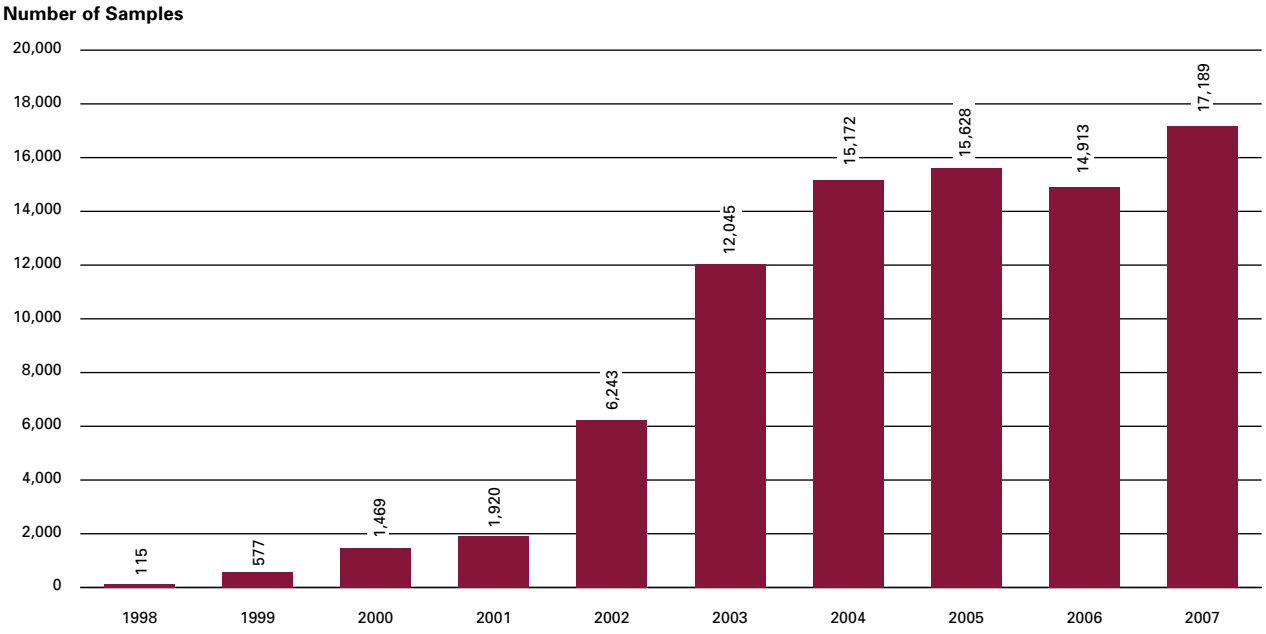
First recognized in 1967 as a clinical "wasting" syndrome in mule deer at a wildlife research facility in northern Colorado, CWD was identified as a TSE in 1978. There is no known causal link between CWD, which occurs in cervids, and any other TSE of animals or humans.

Current Program—APHIS–VS and State CWD surveillance in farmed animals began in late 1997. VS pays laboratory costs for all surveillance testing of farmed cervids. Responses to on-farm CWD-positive cases include depopulation with indemnity or quarantine. When requested by VS, APHIS–WS assists with depopulation of affected farmed cervid herds. Additionally, VS conducts traceforward and traceback epidemiologic investigations.

A proposed CWD herd-certification program for farmed cervid operations has been in process since late 2003. Program goals are to control and eventually eradicate CWD from farmed cervid herds. The proposed program would certify herds that satisfactorily meet program requirements for a minimum of 5 years with no evidence of CWD. The proposed requirements include fencing, identification, inventory, surveillance, and restriction of interstate movement of farmed cervids to those herds enrolled in the herd-certification program. The program is intended to be a cooperative State-Federal-industry program, and State programs that meet or exceed Federal standards will be recognized by the Federal program as approved State programs.

APHIS–VS began supporting CWD surveillance in wildlife in 1997. APHIS first received line-item funding for CWD in FY 2003 and has since provided assistance to State wildlife agencies and Tribes through cooperative agreements to address the disease in free-ranging deer, elk, and moose. Funding for State wildlife agencies is distributed through a tiered system based on presence of CWD and risk of disease introduction, developed in consultation with the Association of Fish and Wildlife Agencies. In some States, WS wildlife disease biologists assist in the

FIGURE 3.2: Number of farmed cervids tested for chronic wasting disease, FY 1998-2007



collection of CWD test samples from hunter-killed wild deer and elk. In addition to assisting individual Tribes, an agreement with the Native American Fish and Wildlife Society funds five regional CWD Tribal biologists to assist Tribes with CWD activities.

APHIS–WS' NWRC is assessing the potential for CWD transmission at the interface between wild and domestic cervids and devloping methods to reduce transmission and spread. As part of this work, the NWRC is assessing the role of scavengers in CWD epidemiology and developing improved containment and removal techniques for cervids. WS and VS are collaborating to implement and validate a rectal biopsy live animal test for CWD in elk and to determine the time to infection relative to transmission route. NWRC is also making progress in developing methods to inactivate prions.

TABLE 3.11: Number of farmed cervid herds with animals positive for chronic wasting disease, by State, 1997–2007

State	1997–2004	2005	2006	2007	Total (1997–2007)
Colorado	12	2	—	—	14
Kansas	1	—	—	—	1
Minnesota	2	—	1	—	3
Montana	1	—	—	—	1
Nebraska	4	1	—	—	5
New York	—	2	—	—	2
Oklahoma	1	—	—	—	1
South Dakota	7	—	—	—	7
Wisconsin	6	1	—	—	7
Total	34	6	1	0	41

Program Status—Since FY 2004, more than 14,900 farmed cervids have been tested for CWD each year (fig. 3.2). From 1997 through 2006, CWD had been identified in 32 farmed elk herds and 9 farmed white-tailed deer herds in 9 States (table 3.11). No new farmed cervid herds were found to have animals positive for CWD in 2007.

Of the 41 positive herds identified as of December 31, 2007, 5 (4 in Colorado and 1 in Wisconsin) remained under State quarantine, and 35 had been depopulated. The quarantine was lifted from one herd that underwent rigorous surveillance for more than 5 years with no further evidence of disease.

FIGURE 3.3: Surveillance testing of hunter-killed and targeted animals for chronic wasting disease

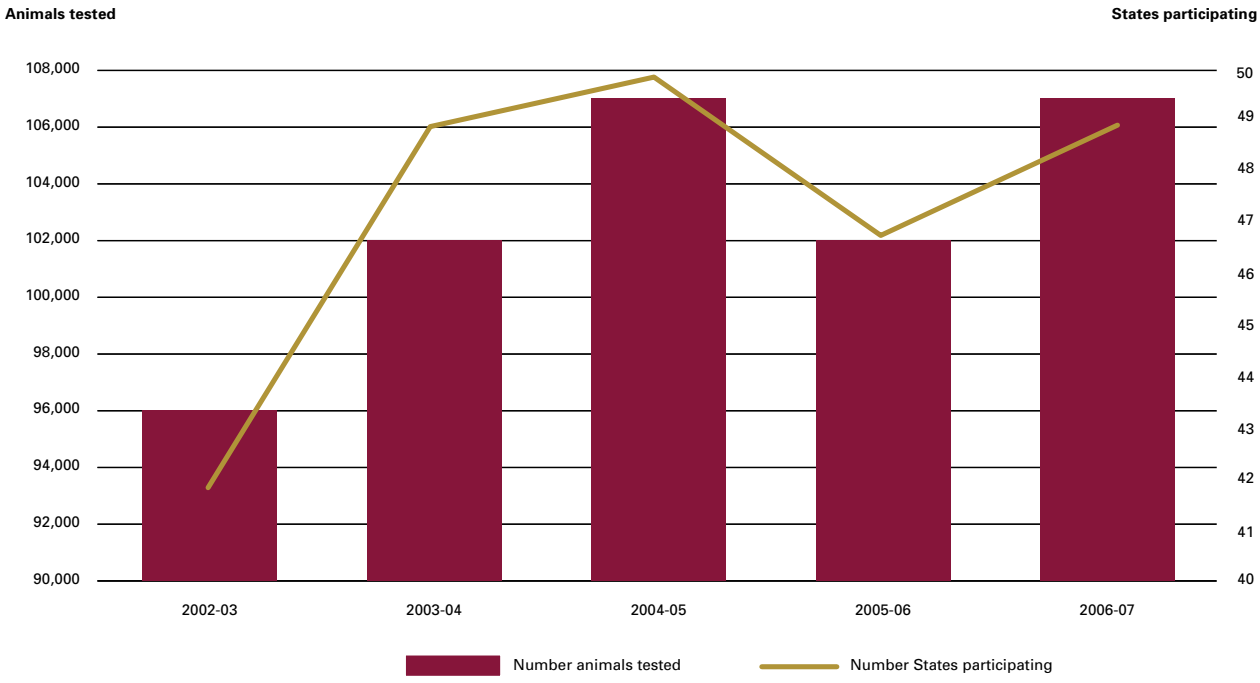


TABLE 3.12: Johne's disease control program statistics, 2000–07

	2000	2001	2002	2003	2004	2005	2006	2007
States in full compliance with the Voluntary Bovine Johne's Disease Control Program	NA	NA	22	35	43	47	49	50
Herds in Johne's control programs	1,952	1,925	3,248	3,268	6,189	6,448	8,738	8,650
Johne's test-negative herds	390	514	631	543	972	1,632	1,792	1,672
ELISA tests performed in cattle	359,601	342,045	592,350	480,586	673,299	697,264	784,978	400,445
Cultures performed in cattle	44,961	43,218	98,094	96,222	101,786	105,685	125,336	63,392

Since 2002, most States have been participating in CWD surveillance in free-ranging deer, elk, and more recently, moose. Each year, more than 90,000 hunter-killed and targeted animals have been tested (fig. 3.3).

For the Future—State agencies raised several concerns in response to the 2006 publication of the final rule establishing the Federal CWD herd certification program and interstate movement restrictions. As a result, VS has delayed implementation of the rule and is addressing those concerns, with plans to publish a new proposed rule in 2008 and a new final rule in 2009.

Johne's Disease in Cattle

Bovine paratuberculosis (Johne's disease) is caused by the bacterium *Mycobacterium avium* subspecies *paratuberculosis* (MAP). In addition to cattle and other ruminants, many species of domestic and wild animals worldwide have been diagnosed with MAP infection. Clinical signs of Johne's disease include weight loss, diarrhea, and decreased milk production.

Current Program—The Voluntary Bovine Johne's Disease Control Program (VBJDCP) is a cooperative effort administered by States and supported by the Federal Government and industry. The program provides national standards for controlling Johne's disease, with the goals of reducing the spread of MAP to noninfected herds and decreasing disease prevalence in infected herds. For more details, see *www.aphis.usda.gov/animal_health/animal_diseases/johnes/downloads/johnes-umr.pdf*. The program has three basic elements:

1. Education—Informing producers about Johne's disease and providing guidance about management strategies that prevent, control, or eliminate it.
2. Management—Completing risk assessments and management plans to help producers identify high-risk areas or practices, and then working with the producers to prioritize changes in management practices to reduce the risk of transmission on their operations.
3. Testing—Testing herds to identify and classify them as test-positive or test-negative (low-risk) herds. Herd classification is based on the number of MAP tests and years of MAP testing in the herd.

Program Status—All 50 States participate fully in the VBJDCP, and 8,650 herds have enrolled in the Johne's disease control program (table 3.12). There are 1,672 herds enrolled in the test-negative component of the program.

Herds in the test-negative component of the program must use an approved laboratory for testing. Approved laboratories are required to pass an annual proficiency test; 81 laboratories are approved for Johne's disease serology testing, 52 are approved for MAP fecal culture, and 13 are approved for polymerase chain reaction/DNA testing. In 2007, these laboratories conducted 400,445 enzyme-linked immunosorbent assays (ELISAs) and 63,392 fecal cultures, in addition to 1,740 pooled fecal samples (5 bovine per pool) and 300 environmental samples. Fewer serum ELISAs and fecal cultures were performed in 2007 mainly because of a decline in Federal funding and an increase in the number of milk ELISAs.

Trichinae in Swine

Disease and Program History—In the United States, the prevalence of *T. spiralis* in pigs has dropped sharply because of changes in swine production practices. The National Animal Health Monitoring System's 1990 National Swine Survey and Swine '95 and Swine 2000 studies reported *T. spiralis* infection rates in the United States of 0.16 percent, 0.013 percent, and 0.007 percent, respectively. In the Swine 2006 study, no samples were positive for trichinae. Because modern pork-production systems have all but eliminated trichinae as a food-safety risk, alternatives to individual carcass testing to demonstrate that pork is free of *T. spiralis* were explored via trichinae pilot programs.

Current Program—The U.S. Trichinae Certification Program (USTCP), initiated as a pilot program in 1997, is based on scientific knowledge of *T. spiralis* epidemiology and numerous studies demonstrating how specific "good production practices" can prevent pigs' exposure to this zoonotic parasite. The program is consistent with recommended methods for control of *Trichinella* in domestic pigs, as described by the International Commission on Trichinellosis.

Three USDA agencies (APHIS, FSIS, and AMS) collaborate to verify that certified pork-production sites manage and produce pigs according to the requirements of the program's "good production practices." USDA also verifies the identity of pork from the certified production unit through slaughter and processing.

Production sites participating in the USTCP may be certified as "trichinae safe" if sanctioned production practices are followed. The on-farm certification mechanism establishes a process for ensuring the quality and safety of animal-derived food products from farm through slaughter and is intended to serve as a model for the development of other on-farm quality and safety initiatives.

Uniform program standards detailing the requirements of this certification program have been developed, along with additional Federal regulations in support of the program. The completion of the pilot phase described here will lead to implementation of a federally-regulated program throughout the United States.

Program Status—Based on risk factors related to swine exposure to *T. spiralis,* an objective audit that could be applied to pork production sites was developed for on-farm production practices. USDA regulates the audits to ensure that program standards are met and certifies that specified good production practices are in place and maintained at the audited pork-production sites. The on-farm audit includes aspects of farm management, biosecurity, feed and feed storage, rodent control programs, and general hygiene.

In the pilot study, objective measures of these good production practices were obtained through review of production records and an inspection of production sites. Production site audits were performed by veterinarians trained in auditing procedures, *Trichinella* risk-factor identification, and *Trichinella* good production practices. From 2000 to 2007, more than 500 audits were completed on farms, and a great majority of these have indicated compliance with the good production practices as defined in the program. These compliant sites were granted status as "enrolled" or "certified" in the program.

Program sites will be audited on a regular status-determined schedule as established by official standards of the pilot USTCP. USDA oversees the auditing process by qualifying program auditors and by conducting random spot audits. Spot audits verify that the program's good production practices are maintained between scheduled audits and ensure that the audit process is conducted with integrity and consistency across the program.

The program calls for swine slaughter facilities to segregate pigs and edible pork products originating from certified sites from pigs and edible pork products received from noncertified sites. This process is verified by FSIS. Swine slaughter facilities processing pigs from certified sites are responsible for conducting verification testing to confirm the trichinae-free status of pigs originating from certified production sites. On a regular basis, statistically valid samples of pigs from certified herds are tested at slaughter to verify that practices to reduce on-farm trichinae-infection risks are working. This process-verification testing is performed using a USDA-approved tissue or blood-based postmortem test and is regulated by AMS.

For the Future—USDA has published in the *Federal Register* draft regulations to establish trichinae certification as an official USDA voluntary program for on-farm risk-mitigation certification in the U.S. pork industry, and has received comments on these regulations. It is expected that the regulations will be finalized during 2008, and the program then will become an official USDA program.

Swine Health Protection Inspection Program

The Swine Health Protection Act, Public Law 96–468, serves to regulate food waste and ensure that all food waste fed to swine is properly treated to kill disease organisms. Raw meat is one of the primary media through which numerous infectious or communicable diseases of swine can be transmitted—especially exotic animal diseases such as FMD, African swine fever (ASF), CSF, and swine vesicular disease.

Current Program—In accordance with Federal regulations, food waste may be fed to swine only if it has been treated to kill disease organisms. Treatments must be made at facilities possessing valid permits issued by VS or by the chief agricultural or animal health official of the State (if the State permits feeding of food waste to swine). Licensed operations must follow regulations regarding the handling and treatment of garbage, facility standards (rodent control, equipment disinfection), cooking standards, and recordkeeping. In addition, licensed operations are required to allow Federal and State inspections.

Program Status—In FY 2007, 29 States and Puerto Rico allowed the feeding of food waste to swine and issued permits to operate garbage treatment facilities. There were 1,951 licensed food-waste cooking and feeding premises (table 3.13), and 9,562 routine inspections were made on these licensed premises during the year.

TABLE 3.13: Statistics on licensing of facilities feeding food waste to swine, 2005-07

Number	FY 2005	FY 2006	FY 2007
States allowing food-waste feeding*	26	29	29
Licensed premises	2,557	2,078	1,951
Routine inspections	9,631	9,889	9,562
Searches for nonlicensed feeders	28,845	27,202	39,107
Nonlicensed feeders found	101	95	87

*Puerto Rico also allowed food-waste feeding.

Because of increased awareness and threats of potential FAD incursions, most States increased efforts to ensure that all food-waste feeders were properly licensed. To this end, field personnel conducted 39,107 searches for nonlicensed food-waste feeders. Through these efforts, 87 nonlicensed feeders were found; most of these were then licensed and now are subject to routine inspections.