



Pseudorabies (PRV) Eradication Plan

Provided by the Animal Industry Division
Michigan Department of Agriculture
June 25, 2008

Background:

What is pseudorabies?

Pseudorabies, also known as Aujeszky's disease or PRV, is a viral disease of swine that can also affect cattle, horses, dogs, cats, sheep, and goats. It does not cause disease in humans and is not related to rabies.

PRV is an extremely contagious herpesvirus that causes respiratory disease and reproductive problems, including abortions and stillbirths in breeding swine. Occasionally, death losses in breeding and finishing hogs occur.

The virus is transmitted through nasal and oral secretions, food, water, and the environment. It can also be carried on vehicle wheels, including tires or buggy wheels, boots, and clothing. Additionally, adult PRV positive swine may harbor the virus without showing clear signs.

The virus can live in humid air and non-chlorinated water for up to seven hours; and in the soil, on clothing, and feces for up to two days. Dogs, cats, and raccoons can physically transmit the virus between farms, but are usually dead-end hosts (the virus kills them). The role of insects and birds in transmission is being investigated.¹

Why is PRV Eradication Necessary?

At this time PRV has been found only in "transitional" swine, such as pigs used for sport shooting on fenced-in game ranches and a few feral swine associated with a game ranch. But, if transmission of PRV from transitional swine on game farms and ranches to commercial operations occurs, the markets for Michigan swine will be restricted. There is also concern of PRV transmission from feral swine to 4-H pigs, which could cause a PRV outbreak at county fairs.

¹ Merck Veterinary Manual: <http://www.merckvetmanual.com/mvm/index.jsp?cfile=htm/bc/102200.htm>

The eradication of PRV is necessary to protect Michigan's quality pork products and the reputation of the \$230 million industry. Michigan gained PRV-free status in 2000, after a 10 year eradication effort.

History of PRV:

PRV was identified in 1902 by Hungarian veterinarian Aládar Aujeszky after he isolated the virus from an ox, a dog, and cat. PRV-like disease reports, as early as 1813, are suspected to have been caused by the virus.

PRV emerged as a significant concern in the United States in the 1960s when the commercial swine industry's management practices, where large numbers of swine are housed under one roof, started to be the norm. In 1989 the U.S. Animal and Plant Health Inspection Service (APHIS) launched a national pseudorabies eradication program in the United States.²

The national PRV eradication program is conducted in cooperation with state governments and swine producers. In January, 1999, then Secretary of Agriculture, Dan Glickman, authorized the transfer of funds to state agencies to accelerate the eradication of PRV.³

After ten years, PRV was declared to be eradicated from Michigan's commercial swine industry in 2000. In 2004, USDA declared the national commercial swine industry free of PRV.

According to the Office of International Epizootics (OIE - an international animal disease surveillance organization), there are 67 countries in the world where PRV has been documented. These countries report to the OIE and document their PRV surveillance systems.⁴ Countries' agriculture departments (USDA in our case) set trade rules and regulations based on the reports from OIE.

Definitions:

There are three categories of swine in Michigan that may affect Michigan's PRV-free status (which is a federal/international designation) in different ways.

Commercial swine are those domesticated pigs raised in bio-secure housing units, raised for the purposes of meat, and consumed as pork. If PRV is found in commercial swine, Michigan's status is affected. Depopulation of PRV-infected herds will occur; swine cannot be removed from herds under quarantine except with permission from MDA; restocking of swine will be done in accordance with a herd cleanup plan; all depopulated swine will be slaughtered and rendered or otherwise disposed of; producers will be responsible for cleaning and disinfecting premises; swine appraisals will be based on fair market value; and a cooperative agreement will be made with USDA to efficiently and effectively conduct the eradication.

² http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=1999_register&docid=fr14ja99-24.pdf

³ DEPARTMENT OF AGRICULTURE, Office of the Secretary, [Docket No. 98-123-1], Declaration of Emergency Because of Pseudorabies

⁴ http://www.oie.int/wahid-prod/public.php?page=disease_status_lists&disease_id=18

Transitional swine are Razorback/Russian/Eurasian wild boar type swine, often crossbred with commercial (domestic swine) and are bred or used for shooting on large fenced game ranches. These swine can be dangerous, are escape artists, and can easily become feral. Pasture raised and 4-H/backyard swine are included in this category because they may come into contact with feral swine. PRV in transitional swine does not affect the status of a state (until the virus is transmitted to commercial swine). Because the risk of transmission to commercial swine is high, swine on outdoor facilities, game ranches, and/or pasture raised swine will be destroyed if they are PRV positive. The same effort as for commercial swine will take place: depopulation, disposal, cleaning and disinfecting, fair market value appraisals, and indemnity.

Feral swine are defined in Michigan as any pig free-ranging outside an enclosure. PRV in feral swine does not affect the status of a state (until the virus is transmitted by feral swine to commercial swine). In most Michigan counties, feral swine may be shot through-out the year, as long as a shooter has a valid Michigan hunting license. USDA Wildlife Services is available by contract to trap and kill feral swine as well. The Michigan Department of Natural Resources (DNR) keeps an up-to-date account of feral swine in Michigan. Both maps and tables are available on the DNR Web site.⁵

Current Situation:

Cause of PRV in Michigan's transitional and feral swine populations:

Although it is speculative, it is believed PRV arrived in Michigan through transport of shooting swine from another state with PRV in the feral swine population. The USDA has a map depicting the range of feral swine in the U.S. in 2004.⁶

To date, PRV in Michigan has been documented in swine in five facilities associated with shooting swine and in five feral swine that may have escaped from a PRV positive Saginaw County facility. The attached map⁷ shows the locations of the PRV positive facilities with transitional swine epidemiologically associated with the Saginaw County facility. In 2006, a positive anti-body test was reported from a game ranch in Roscommon County. The test indicated previous exposure, but the shooter pig did not have active, contagious disease.

MDA and USDA have been trapping and shooting swine on the Roscommon County premises at the request of the owner. None of the swine taken from the facility had active disease. The one feral pig shot outside of the Roscommon County facility was negative for disease. The feral swine in Saginaw County were in close proximity to the shooting facility, therefore the five-mile circle remains the same.

Since the risk of transmission from transitional swine to commercial swine exists, Michigan has temporarily quarantined (no movement of swine on, or off) all game ranches in Michigan with shooting swine; all farms with swine within a five-mile radius

⁵ See attachments 1 and 2

⁶ See attachment 3

⁷ See attachment 4

around the four PRV positive facilities; and all facilities associated epidemiologically with PRV positive transitional swine.

Approach to PRV Eradication

USDA's Program Standards:

Under the state-federal PRV eradication program Michigan must accomplish the following to maintain PRV-free status⁸:

- a. Producers, veterinarians, and laboratories must report suspected PRV to the State Veterinarian

MDA must:

- b. Conduct diagnostic and epidemiologic investigations of suspected PRV
- c. Quarantine premises on which PRV is confirmed
- d. Trace purchases and sales of swine to and from quarantined premises, and inspect and collect diagnostic specimens from such swine
- e. Regulate shipments of breeding swine, feeder pigs, and slaughter swine within and into the State
- f. Control the use of PRV vaccines
- g. Control disposal of dead animals
- h. Have a system for distribution of PRV literature to producers and other interested groups developed and functioning
- i. Enforce applicable Federal PRV regulations
- j. Provide USDA with a quarterly report
- k. Provide USDA with weekly reports during a disease investigation
The report must contain the following information:⁹
 - 1. number of producers contacted
 - 2. number of producers enrolled
 - 3. number of swine enrolled (cumulative)
 - 4. number of swine appraised, number of herds, and dollar value
 - 5. number of swine euthanatized/depopulated
 - 6. amount of indemnity (per premises and State total)
 - 7. number of personnel (State, Federal, and temporary employees and others such as local hires)
 - 8. number of premises cleaned and disinfected
 - 9. cumulative total program costs (general, a detailed report will be sent to Management Support Staff)
 - 10. number of remaining infected herds (including producers who decline to participate in the APEP)

⁸ Pseudorabies Eradication State-Federal-Industry Program Standards, Effective January 1998

⁹ January 14, 1999, VETERINARY SERVICES NOTICE 99-01

The Testing Process:

Whenever possible, testing swine for PRV and brucellosis is done by restraining the animal and drawing a blood sample from the neck. In some cases, especially on shooting ranches, the swine cannot be caught and restrained to collect a blood sample. In these cases, samples will be collected through a slaughter surveillance program, similar to the program in place for bovine TB surveillance on privately owned cervid ranches.

Blood samples are submitted to MDA's Geagley Laboratory for testing. The National Veterinary Services Laboratory may be used for confirmatory testing.

Stop Movements, Quarantines, and Bio-security measures:

Fairs and exhibitions can serve as disease transmission points, and MDA requires PRV testing for all swine at 2008 fairs and exhibitions, unless a Michigan fair or exhibition is a terminal show. If a fair or exhibition is a terminal show, testing is not required and all swine must go directly to slaughter after the show.

During PRV eradication efforts, people must wash vehicles before leaving or entering swine areas of an infected farm or ranch. They must disinfect tires, wheels, shoes, and clothing before leaving or entering swine areas. People should not wear dirty hunting or work clothing or boots from a known PRV infected ranch or farm to locations where farmers may be exposed to the virus, i.e. grocery stores, restaurants, grain elevators, etc.

Stakeholders Affected by PRV Eradication Efforts

Individuals involved in swine production, showing or shooting are affected by the disease eradication efforts in different ways.

Game ranch owners are in the business of selling shooting events. They may continue to sell shoots, but their properties have been quarantined. No live swine may come onto or off the facility. The swine that have been purchased from breeders and turned loose on the fenced-in property may be shot. The transitional swine on these ranches are dangerous, aggressive, and dig easily under fences. Quarantining game ranches, without allowing shoots may lead to additional swine escapes. Bio-security measures must be in place in order to prevent the spread of disease from these facilities.

Breeders and suppliers of shooter swine are under quarantine (quarantines will be released after the swine test negative) and have been informed that they are required to supply and sell only PRV test-negative swine.

Commercial swine producers are not currently affected by the PRV eradication effort.

Families with 4-H and FFA exhibitors are temporarily affected by the disease eradication effort because fairs this season will either be terminal (go to slaughter after

the show) or test (swine must have a negative test before arriving on the exhibition premises).

Farmers with swine in the five-mile testing circles established around PRV positive facilities are quarantined and must have their swine tested. They will receive information about the dangers of contact with feral swine. Families will be encouraged to shoot/report feral swine.

Program Support

Partners in the PRV Eradication Process:

Michigan Department of Agriculture
Michigan Department of Natural Resources
U.S. Department of Agriculture, Veterinary Services
U.S. Department of Agriculture, Wildlife Services
The State Swine Health Committee
Michigan Pork Producers Association
Michigan Farm Bureau
Michigan State University Extension
Michigan State University Diagnostic Center for Public and Animal Health

Value of Swine to Michigan's Economy:

According to the 2006-2007 Michigan Agriculture Statistic Survey (MASS), Michigan has approximately 2,100 premises with swine. Michigan Pork Producers Association (MPPA) estimates 245 of the above listed operations produce 80 percent of Michigan's hogs for commercial use.

In 2007, Michigan commercial swine totaled 1.8 million. The eradication of PRV is necessary to protect Michigan's quality pork products and the reputation of the \$230 million industry. Michigan gained PRV-free status in 2000, after a 10 year eradication effort.

MPPA indicates there are several types of operations, some are farrow (have babies)-to-finish (which means that they breed the animals, have babies, and raise the pigs to market weight); other operations may just farrow or just finish.

Some producers work with contractors out of the state and would be severely impacted if there was a ban on importation/exportation of commercial swine.

The 4-H Statistical Summary of 2006-2007, compiled by Michigan 4-H Youth Development, indicates there were 13,842 4-H swine project members in Michigan. The latest data from MSU indicates that approximately 20,700 pigs were sold by 4-H members in 2006-2007.¹⁰

¹⁰ Kenneth R. Geuns, Extension Specialist - Livestock Youth, Faculty Coordinator - MSU Purebred Beef Unit, Dept. of Animal Science

If the 20,700 4-H pigs reach a market weight of 270 pounds, and sell for 72.15 cents a pound (recent national average), the total value per hog (not all of which are sold at county fairs) is about \$195. The total direct economic impact is \$4.04 million. The total economic impact (including indirect and induced economic activity resulting from the production and sales of these hogs) is \$6.17 million.¹¹

Costs associated with PRV eradication efforts:

Depopulation and disease testing:

The elimination of PRV positive and exposed transitional swine on four shooting ranches will cost approximately \$415,000.

Elimination of all transitional swine on 35 Michigan shooting/game ranches over the next year will cost approximately \$3.4 million for indemnity, depopulation, and disposal.

Approximately \$1 million is needed for equipment, laboratory work, information technology, staff (for disease testing, shooting, education and outreach) and communications over the next two years.

Estimates compiled by partners indicate that transitional swine PRV eradication efforts over the next two years will cost approximately \$4.8 million.

Additionally, it will be necessary to trap and shoot feral swine not taken by hunters. Feral swine by nature are unpredictable and very elusive. Removal of swine running at large will be complicated by dispersal across private properties where landowner permission will be required before control can occur.

USDA Wildlife Services (WS) will conduct surveys via spotlights, trail cameras, and Forward Looking Infrared (FLIR) technology to estimate population size and distribution of feral type swine in areas designated for reduction. WS will trap or shoot feral swine to the degree that landowner access allows. The pilot project will continue as funds allow, but it is recommended that actions be undertaken for several weeks to allow for complete removal of swine running at large in an area. MDA has budgeted \$100,000 for USDA WS feral swine eradication efforts.

Legislative support:

Current legislation protects the commercial swine industry, but does not take into account the game ranch industry.

Amendments to Act 466, PA 1988, as amended, are necessary to ban hunting/shooting of swine behind fences. This is extremely important, as the facilities that offer sport shooting do not have adequate fencing to keep transitional swine enclosed.

The animals running at large act must also be amended to allow the statewide shooting of feral swine.

¹¹ Bill Knudson, Product Marketing Economist, Michigan State University Product Center

Strategic Eradication Plan:

Michigan will continue to trap and euthanize feral swine. With help from hunters, we will eliminate feral swine from Michigan. Shooting ranches must be responsible for livestock that escape and MDA must prosecute illegal activity.

MDA will use an action plan for feral swine eradication and PRV eradication to identify stakeholders, responsible individuals and procedures.

A Swine Health Committee and a Swine Technical Committee have been revitalized. These committees will advise MDA on PRV prevention actions, as well as cleaning, disinfection, and repopulation measures.

Conclusion:

Feral swine and the spread of PRV are interconnected. Feral swine may also become infected with bovine TB in areas where the disease is confirmed. With quick and aggressive action, Michigan plans to have PRV eradicated from the transitional swine population within months.

Swine in the wild are breeding and the population is expanding. Michigan winters, even in the Upper Peninsula, do not keep the feral swine population in check. The longer term plan is to eliminate feral swine from Michigan and control escape of transitional swine from shooting ranches. MDA is seeking action to ban swine shooting on game ranches and fenced-in facilities.

Education and outreach regarding importation and health requirements of swine, quarantining swine on game ranches, preventing the movement of swine between ranches, and good bio-security that keeps transitional swine on farm/ranch premises and feral swine away from 4-H hogs, will make this PRV threat a minor event in Michigan's animal health history.

Attachment 1

Michigan Feral Swine Update 06/20/08

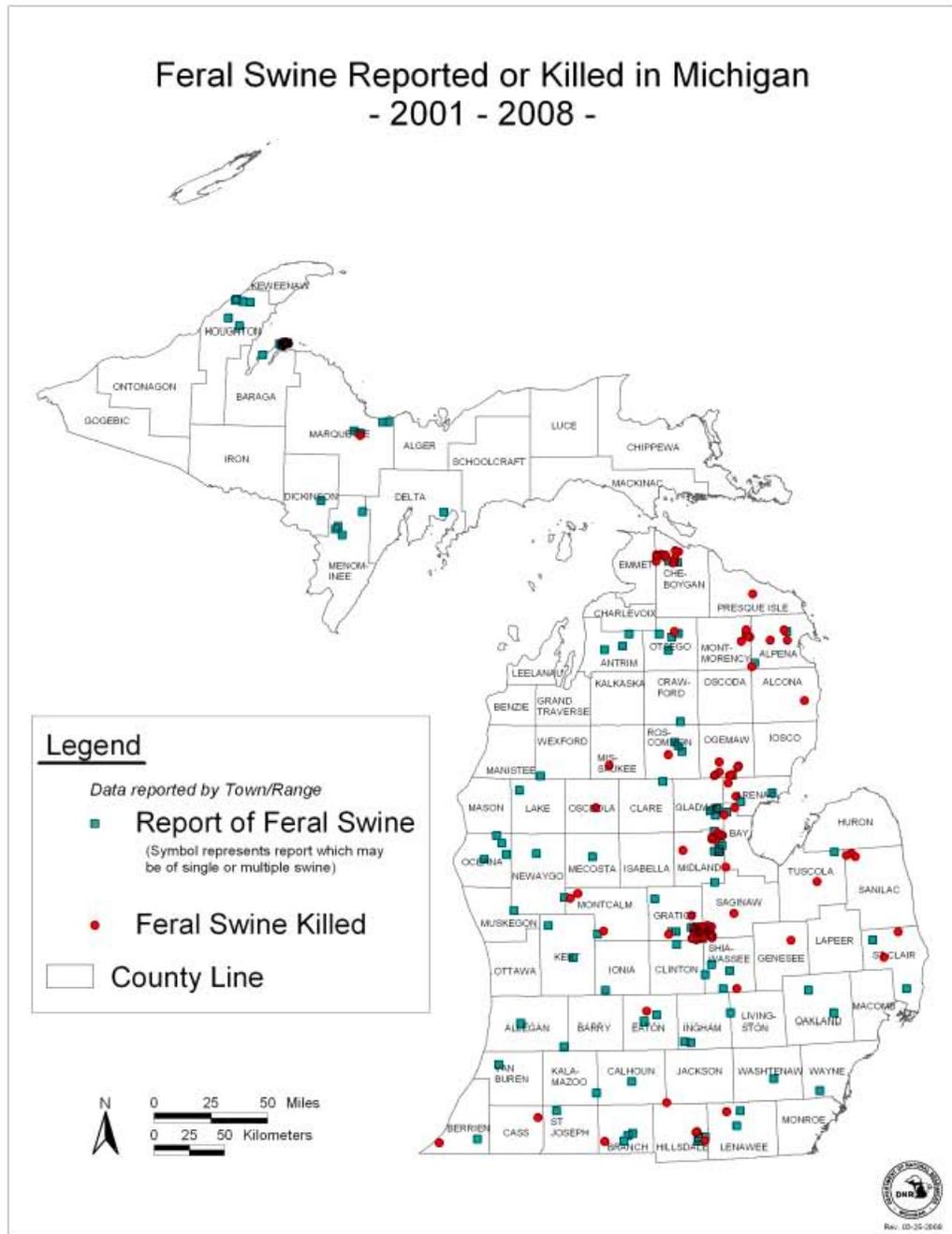
Feral Swine reported or taken by County

County	Swine sightings	Swine taken	Comments	Swine submitted for disease testing*
Alcona		1		
Allegan	2			
Alpena	2	4	1 Car kill	
Antrim	3		Skull found on property	
Arenac	2	2	Several reported in group	
Baraga	6	32	Several reported in group	
Bay	1	4	1 Car kill	
Berrien	1	1		
Branch	3	1	Several reported in group	
Calhoun	1			
Cass	2	1	Several reported in group	2
Cheboygan	9	11	Several reported in group	
Clare	1		Several reported in group	
Clinton	2	2		
Crawford	1		Several reported in group	
Delta	1			
Dickenson	1			
Eaton	2	1		
Emmet	1		Several reported in group	
Genesee		1	Euthanized	1
Gladwin	4	2	20+ pigs seen repeatedly	
Gratiot	18	14	20+ pigs seen repeatedly	3
Hillsdale	4	3		2
Houghton	4			
Ingham	2	1	Several reported in group	
Ionia	1			
Iosco	3		Damage reported	
Kalamazoo	1		Several reported in group	
Kent	3			
Jackson		1		
Lake	1		Several reported in group	
Leelanau (new)	1		Several reported in group	
Lenawee	2	1	1 car kill, several pigs seen	1
Livingston	1			
Marquette	4	1	Several reported in group	
Mecosta	1	1		
Menominee	4		Several reported in group	
Midland	14	8	Several reported in group	1
Missaukee		1	Car kill	1
Monroe		1	Fall, 2004	
Montcalm	2	3		1
Montmorency	1	4	Several reported in group	
Newaygo	3		Several reported in group	
Oakland	3		Several reported in group	
Oceana	4	8	Several reported in group	
Ogemaw	1	9	Several reported in group	5
Osceola		1		
Oscoda	1		30 pigs in a group	
Otsego	4	1	Several reported in group	
Ottawa		7	Several reported in group	
Presque Isle		1		1
Roscommon	3	1	Several reported in group	
Saginaw	3	12	Several reported in group	5
Sanilac		3		
Shiawassee	4	1		
St. Clair	2	2	Car kill	
St. Joseph	1			
Tuscola	1	1		
Van Buren	1			
Washtenaw	1		Several reported in group	
Wayne	1			
Wexford	1	1		
Unknown		3		3
Total	63	147	153	26

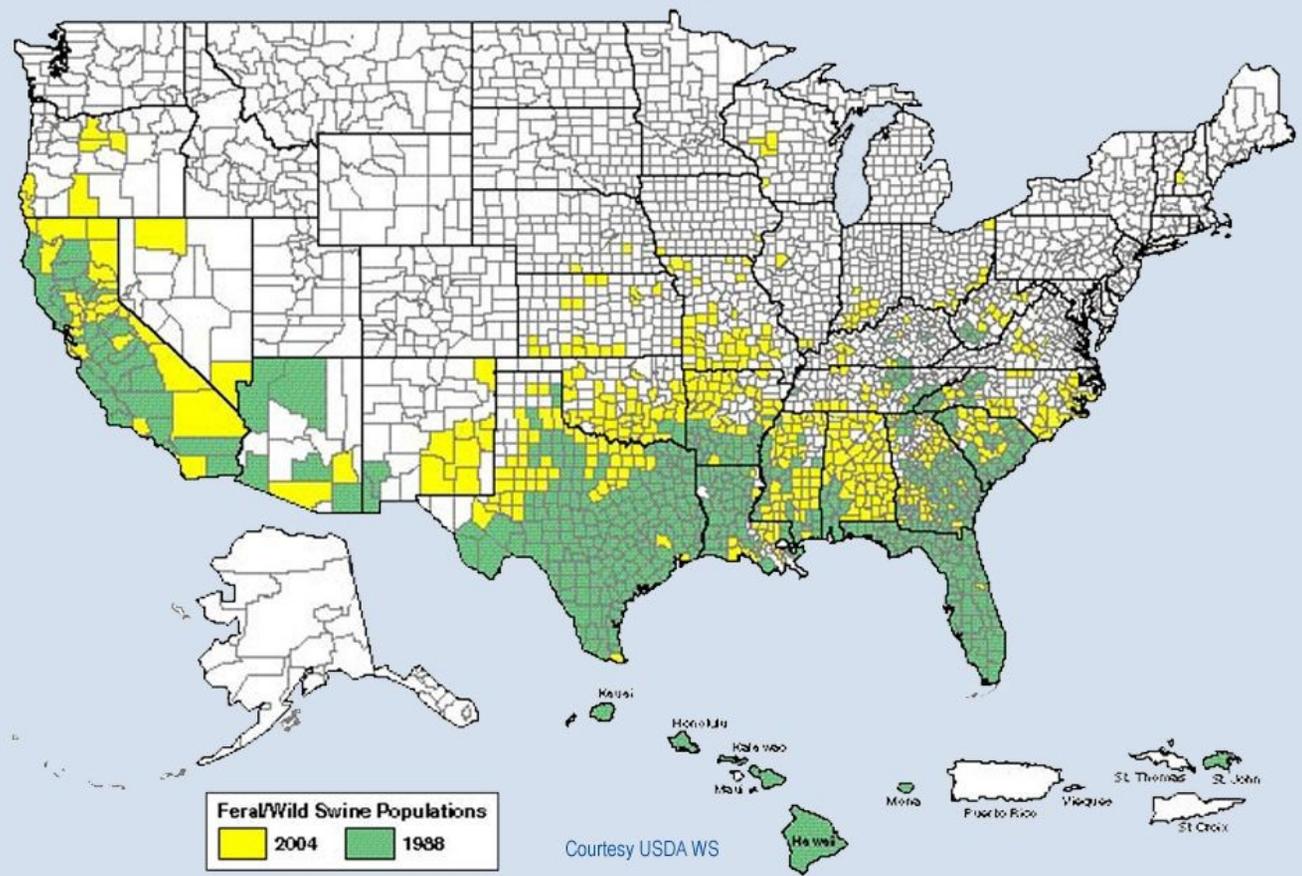
*Swine samples submitted include head, viscera, and/or blood.

-Data includes reports from historical records from MDNR, MDA, and various Animal Control agencies from 2001-2005. Data from 2006-2008 was collected via phone calls and email reports by MDNR.

Feral Swine Reported or Killed in Michigan - 2001 - 2008 -



Feral Swine Range Expansion



Pseudorabies Virus (PRV)

Current Surveillance Testing of "Transitional"
(Russian and Eurasian hybrid) Swine.
May 21, 2008



Pseudorabies (PRV) is a highly contagious viral disease of swine that causes newborn piglets to die. Rarely, the disease can cause sudden death in cats and dogs and can affect cattle, sheep, and deer. PRV does not cause illness in humans, and is not related to rabies. The map shows five-mile radius testing around PRV positive game ranches in Michigan.