

Section 4  
Disease Issues

## Section 4 – Disease Issues

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This section will discuss disease issues important to wild pig management and control.

Wild pigs are well known for environmental and economic damage, but their presence also has implications for the health of hunters and landowners. Wild pigs are known to carry or transmit over 30 diseases and 37 parasites, and many of these can be transmitted to domestic pigs, humans, pets, wildlife, or other livestock.

The National Wildlife Disease Program (NWDP, USDA APHIS VS) tests wild pigs for three foreign and seven endemic diseases. These foreign diseases – classical swine fever, African swine fever, and foot-and-mouth disease – are not present in the United States but are monitored for precautionary reasons. If one of these diseases is suspected in your area, call the Wildlife Services Hotline (866-487-3297).

According to the USDA APHIS Wildlife Service's *On the Watch for Wildlife Disease*, the NWDP tests over 2,300 wild pigs annually for diseases of interest (2009).

Some wild pig diseases can infect humans. These are known as zoonotic diseases and include the following:

- brucellosis,
- leptosporosis,
- toxoplasmosis, and
- trichinosis.

Livestock, pets, and wildlife can contract:

- psuedorabies,
- tuberculosis,
- swine fever,
- brucellosis, and
- vesicular stomatis.

Damage caused by the many diseases spread by wild pigs is often financial in nature.

Human, or zoonotic, diseases are treatable and often curable, but treatments and doctor visits can be quite expensive, especially because some zoonotic diseases can be very difficult to diagnose. Diseases transmitted to livestock often cause financial damage to farmers and ranchers because of veterinarian bills, but these diseases can also lead to livestock death, causing immediate financial loss.

Many of the diseases spread to livestock by wild pigs have historically been eradicated from domestic animals using vaccination or good animal husbandry. Over the years, many diseases have been eliminated from domestic pigs. Good animal husbandry and surveillance can prevent the introduction of new diseases. However, a disease introduced by wild pigs can rapidly spread throughout livestock herds and wildlife populations, making it extremely costly, extremely difficult, and, in some cases, impossible to eliminate.

While there are multiple diseases that can be spread by wild pigs, a full coverage of all of them is beyond the scope of this management guide. For the purposes of this manual, only those diseases most often encountered by hunters, farmers, and landowners, as well as those diseases posing the greatest threat to human health, will be discussed.

These illnesses are typically caused by a bacteria or a virus. Some diseases are caused by a parasite or other causative agent. Humans can contract more than two dozen illnesses from wild pigs, and most of these are passed to humans during cleaning (field dressing) wild pigs or during the consumption of undercooked meat or pork products. These diseases have different vectors for means of infection.

### *Brucellosis*

Brucellosis is a bacterial disease that affects livestock or wild animals — primarily cattle, bison, elk, and swine — and humans. There are multiple forms of the *Brucella* bacteria. Swine brucellosis has been nearly eradicated from domestic pigs, but wild pigs, especially those in the southern United States, remain a reservoir for this disease.

Infection rates vary – up to 9% of wild pigs tested positive in South Carolina; 3.5% in Louisiana; 10% in Texas; 22% on some hunting areas in Arkansas. Up to 4% of wild pigs tested in Georgia were positive for brucellosis. Humans contract this disease through contact with blood, other fluids, and/or tissue of infected wild pigs. People can become ill if these substances come in contact with the eyes, nose, mouth, or a cut on the skin.

Diagnosis of brucellosis in humans is often difficult because it often resembles and shares symptoms with other illnesses. In some cases, symptoms may not become apparent for as long as four to six months after initial infection. Confirmation of infection requires a blood test and sometimes a tissue sample.

Patients often experience:

- Joint pain,
- Reduced appetite,
- Headaches,
- Chills,
- Weakness or fatigue,
- Abortion in women and testicular pain in males,
- Potential weight loss,
- Difficulty breathing/chest pain,
- Enlarged liver and/or spleen, and
- Abdominal pain.

Characteristics of brucellosis in livestock:

- Abortion or birth of weak offspring; abortion typically occurs between five to seven months into pregnancy.
- Milk production is reduced.
- Infected livestock usually abort once; sometimes sequential abortions may occur in any given individual.
- Offspring born from later pregnancies are often weak and unhealthy.
- Though offspring appear healthy, infected livestock continue to harbor and spread infectious bacteria; offspring of infected individuals should be treated as dangerous sources of the disease.
- Poor conception rates and lowering of fertility has been observed.
- Uterine infections are caused by the retention of afterbirths.
- Joints are often enlarged and arthritic.

Transmission of the *Brucella* bacteria often occurs during direct contact with infected animals. Contact can be in the form of nose touching, licking, sexual contact, or grooming. Other ways for transmission include contact with an environment in which an infected individual has urinated, given birth, or drunk from a water tank or trough. Aborted fetuses, placental membranes or fluids, and other vaginal secretions present after an infected animal has aborted or calved are all highly contaminated with contagious bacteria. Livestock may lick placental fluids or the genital area of other animals or ingest the bacteria with contaminated food or water.

The general rule is that brucellosis is carried from one herd to another by an infected or exposed animal. For this reason, wild pigs should never be introduced or mixed with domestic herds unless they are tested and certified free of disease.

Human infection most often occurs through field dressing harvested wild pigs. Blood, guts, and knife cuts are common avenues of exposure. Humans can also be infected through the consumption of undercooked meat.

There is no cure for brucellosis in humans or animals; only treatments are available. Humans are treated with very high doses of antibiotics for extended periods of time to clear the infection. Wearing latex or rubber gloves while cleaning and butchering harvested pigs is an important precautionary measure for avoiding exposure. Also, make sure any meat consumed is thoroughly cooked. Using a meat thermometer, cook all meat to an internal temperature of 160° F.

### *Pseudorabies*

This disease is caused by a type of herpes virus. It is not related to rabies. It does cause symptoms similar to rabies, such as convulsions and excessive salivation, and it does affect the central nervous system. The disease was named for the similarity in symptoms, but it is also known as Aujeszky's disease and Mad Itch disease. Infection rates among wild pigs are generally much higher for pseudorabies than for brucellosis. In fact, swine, which includes wild pigs, are the main host of this disease. Pseudorabies does not affect humans.

Pseudorabies frequently causes abortions and mortality in mature sows. In swine, it is often spread by asymptomatic carriers, or individuals that carry the disease but show no signs of illness. The virus can survive on environmental objects and be transmitted by contaminated boots, trucks, tires, feed, and equipment. Horses rarely contract the disease, while dogs and livestock are susceptible to infection.

Studies have shown that up to 50% of wild pigs in Florida and 30% in some areas of South Carolina are infected with the virus that causes pseudorabies. This disease is rarely fatal to adult pigs but causes abortion in pregnant sows and death in young piglets.

Characteristics of pseudorabies:

- Infected individuals often suffer from lesions in the central nervous system, respiratory system, and/or reproductive system.
- In domestic pigs, clinical signs may vary from unnoticeable to infections that are often fatal.
- Young pigs less than four weeks of age often display symptoms including light fever, tremors, uncoordinated movements, convulsions, and death.
- Adults usually survive but often exhibit fever and upper respiratory inflammation.
- Infection of pregnant individuals often results in abortion of the fetus or still births.
- In wild populations, the disease is rarely fatal.

When pseudorabies affects the central nervous system of other animals, loss of appetite, depression, staggering, spasms, and high mortality rates occur. This disease is also known as Mad Itch because it leads to self-mutilation as a result of persistent scratching and rubbing.

Pseudorabies is spread through:

- Contact with an infected individual's saliva or nasal discharges
- Shared feed and watering troughs, as has been reported in Florida and Texas (This method is responsible for most of the transmission events from wild pig populations to domestic livestock)
- Ingestion of infected meat, as is seen in carnivorous species
- Sexual contact, especially in wild pig populations

Every year, millions of dollars are spent to diagnose and prevent the spread of pseudorabies. Most often seen in wild pig populations, the disease can be drastically reduced with the exclusion of wild pigs. The disease is highly transmissible to livestock.

The capture and relocation of wild pigs without the proper testing is illegal in most states, including Georgia. Where wild pigs and livestock interact, the best means of pseudorabies prevention is wild pig population control and exclusion of wild pigs from feeding and watering areas.

### *Trichinosis*

While most diseases associated with wild pigs are caused by bacteria or viruses, trichinosis is caused by a nematode parasite, commonly known as a round worm. Most mammals, including humans, are susceptible to infection and most often become infected through the ingestion of muscle tissues.

Trichinosis typically does not cause illness in wild pigs or other animals but may cause behavioral changes. Infection can be quite severe in humans.

- Adult nematodes inhabit the intestinal tract of all infected individuals.
- In humans, infection causes abdominal pain, nausea, cramps, and vomiting.
- The larvae of the parasite invade the muscle tissues, usually active muscles like the tongue, diaphragm, jaw, and intercostal muscles.
- This generally leads to fever, muscle pains, facial swelling, fatigue, skin lesions, and swelling of the upper eyelids, which causes a sensitivity to light, also known as photophobia.
- If left untreated, infection can be fatal for humans.
- Abdominal symptoms usually occur 1-2 days after infection, but other symptoms can take 2-8 weeks.
- Treatment should begin as soon as a diagnosis is made.

Human infection is most often a result of ingestion of undercooked meat, including both wild and domestic pork. The number of incidents directly related to domestic pork sources has been greatly reduced in recent years.

To avoid infection:

- When handling meat from wild pigs, wear latex or rubber gloves.
- Cook meet to an internal temperature of 160° F.

To prevent the further spread of Trichinosis to other wildlife species:

- Bury the carcass of any dead animal.
- Georgia law requires dead animals to be buried at least 3 feet deep and not in a way that contaminates surface or ground water (O.C.G.A. § 4-5-5).
- Carcasses can also be burned to prevent further infection and spread of the disease.

### *Classical Swine Fever*

Primarily known as hog cholera, this disease is caused by a virus once prevalent among domestic pigs. However, this was eradicated from the United States in the 1970s.

Characteristics of Classical Swine Fever:

- Infected individuals show signs of depression, loss of appetite, sleepiness, and fever.
- Vomiting and diarrhea may also occur, causing progressed weakness in infected animals.
- Symptoms progress rapidly; animals may die within 10 to 20 days after initial infection.
- Before death, the animal will convulse violently.
- If the virus does not cause death, the condition will become chronic, but symptoms are milder; infected individuals become carriers.

The virus is easily transmitted from pig to pig by direct contact, such as nasal discharge, licking, and grooming. Classical Swine Fever can be spread via exposure to contaminated feeders or pens. If infection does occur in a domestic pig population, it must be reported to state and federal animal health authorities.

### ***Porcine Epidemic Diarrhea Virus (PEDv)***

PEDv was first diagnosed in the United States in 2013. PEDv continues to wreak havoc on domestic populations. It is a viral disease associated with outbreaks of diarrhea and vomiting in pigs. Recently, the virus was found in two sets of samples from a domestic swine show in Perry, GA. While not transmissible to humans, PEDv still affects humans financially through losses of domestic pig stock.

Porcine Epidemic Diarrhea Virus:

- is most devastating to young pigs and is almost always fatal.
- affects pigs of all ages and can be fatal to older pigs. Typically, adult pigs will recover within 7-10 days.
- is usually transmitted through ingestion of fecal matter during in feeding.

Currently, there is no treatment for PEDv. Due to the epidemic presented by the disease, all confirmed cases of PEDv must be reported to the United States Department of Agriculture as of April 18, 2014.

### **Other Biological Concerns**

#### Leptospirosis

Caused by bacteria, this ancient disease may be the most widespread zoonotic disease in the world. It can and does occur in domestic swine; prevalence in wild pigs is not clear. If infected, wild pigs can shed the bacteria in water, causing potential exposure of humans while swimming, fishing, or during floods.

### *E. coli*

There are many varieties of these common bacteria. Most are harmless, even beneficial, and routinely inhabit the human intestinal tract. However, several variants, notably *E. coli* O157, can cause illness in humans. Pigs are known carriers of *E. coli*. Up to 15% of animals tested in California were positive for *E. coli* O157. Wild pigs are widely believed to be responsible for the California outbreak of human illness several years ago caused by spinach from a field, which was exposed to and contaminated by wild pigs. In Georgia, streams within the Pennahatchee Creek watershed in Dooly County had high levels of *E. coli* contamination. Following an investigation, funds secured by Georgia Environmental Protection Division were used to implement a Watershed Management Plan to reduce wild pig populations in the watershed as an effort to reduce fecal contamination, including *E. coli*. Those funds also led to the production of this manual.

### **General Precautions for Handling Wild Pigs**

- Wear latex or rubber gloves when cleaning, field dressing, or processing wild pigs.
- Thoroughly clean knives, saws, and all surfaces with hot soapy water and a commercial disinfectant, such as bleach, after processing wild pigs.
- Store and handle wild pig meat and meat products safely.
- Cook all wild pig meat and meat products to an internal temperature of 160° F.