

# Swine Disease Global Surveillance Report

Worldwide pork production is highly interconnected by trade between countries and markets which could increase the risk of introduction of foreign pathogens into the US.

## PROJECT

The aim of these reports is to have a system for near real-time identification of hazards that will contribute to the mission of assessing risks to the industry and ultimately, facilitate early detection and identification, or prevent occurrence of events, in partnership with official agencies, and with our international network of collaborators.

Monthly reports are created based on the systematic screening of multiple official data sources, such as government and international organization websites, and soft data sources like blogs, newspapers, and unstructured electronic information from around the world, that then are curated to build a raw repository. Afterward, a group of experts uses a multi-criteria rubric to score each event, based on novelty, potential direct and indirect financial impacts on the US market, credibility, scale and speed of the outbreak, connectedness, and local capacity to respond average is calculated. The output of the rubric is a final single score for each event which then it is published including an epidemiological interpretation of the context of the event.

*These communications and the information contained therein are for general informational and educational purposes only and are not to be construed as recommending or advocating a specific course of action.*



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# Swine Disease Global Surveillance Report

Monday, June 3, 2019 – Monday, July 1, 2019

## Report Highlights

- **First African swine fever (ASF) outbreak reported in Laos:** On June 20, Laotian authorities reported the first seven outbreaks of ASF in the southern province of Saravane.
  - **Largest outbreak of ASF in Vietnam:** On June 25, authorities of Dong Nai province released a statement reporting an outbreak in the largest farm (18,000 pigs) since the start of the epidemic.
  - **USDA launched Feral Swine Eradication and Control Pilot Program:** USDA is offering \$75 million in funding for the eradication and control of feral swine through the Feral Swine Eradication and Control Pilot Program (FSCP) in a joint effort between USDA's Natural Resources Conservation Service (NRCS) and Animal and Plant Health Inspection Service (APHIS).
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## African Swine Fever

In the latest data collected on June 28 from the World Organization for Animal Health (OIE), it shows 14 countries and territories are currently suffering from new or ongoing outbreaks of the disease: *Belgium, Hungary, Latvia, Moldova, Poland, Romania, Russia, Ukraine, mainland China, Hong Kong, North Korea, Vietnam, South Africa, and Laos.*

### ASIA

ASF continues to spread through Asia with outbreaks reported for the first time in Laos, and in the Vietnamese southern provinces of Ba Ria - Vung Tau and Lam Dong. Also in June, the Chinese provinces of Qinghai and Guizhou have reported new outbreaks.

Non-affected countries face an increased challenge to prevent the disease entering their borders. The whole region is characterized by porous borders that exponentially increase the risk of the disease entering neighboring countries. **Thailand's** concerns have raised greatly with Laos reporting its first case (67 km in a straight line to the Thai border), and it has triggered the implementation of stricter protocols at border checkpoints. Pork imports from the neighboring country have been banned, including live pigs and carcasses, for 90 days. The Thai government also has tightened inspections at airports and border checkpoints, closed down illegal slaughterhouses and traders, and imposed stricter requirements for reporting hog deaths. At airports and borders, authorities have confiscated 550 products since last August, detecting the virus 46 times, according to the Livestock Department.

Regional experts (GF-TADs) said Thailand is now on "red alert," and also fear outbreaks in Myanmar and the Philippines.

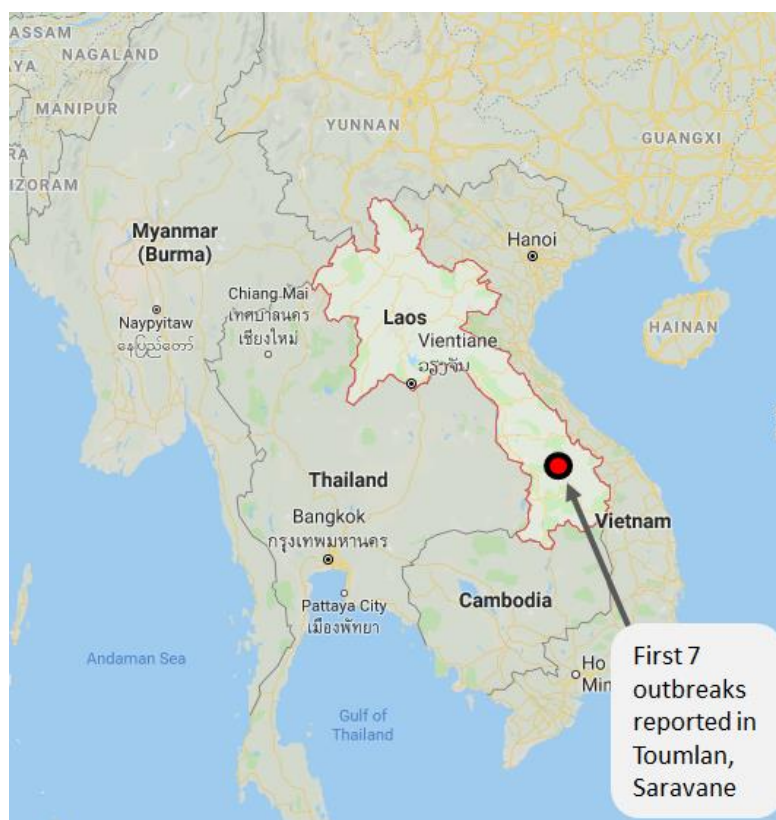
Simultaneously, **South Korea** has introduced new control measures to prevent the incursion of the disease from North Korea. With this goal, South Korean authorities have set up quarantine facilities in the border area and farms south of the Demilitarized Zone were disinfected last week. Active surveillance efforts at 600 farms near the border, including sampling and testing for ASF, have shown no signs of the disease.

**Malaysian** authorities, as a precautionary measure, have declared a ban on pigs and pork products imported from China, Poland, Belgium, Thailand, Vietnam, Cambodia, and Laos. Furthermore, they said that Malaysian Quarantine and Inspection Services (Maqis) has tested and found no ASF virus detected on 180 pork and pork product samples that were imported from the countries that were affected by the virus. Also, active surveillance has been conducted at commercial pig farms in eight states, with no detection of clinical signs in any of them. Regarding wild boars, samples were taken from six states all of which were negative for ASF, which would indicate that ASF is not circulating in the target population.

### **Laos (Lao People's Democratic Republic)**

On June 20, Lao reported its first seven outbreaks of ASF to the OIE. The first outbreak started on June 2 in the village of Samakhhixay, Toumlan district (Saravane province), and it was confirmed on June 17 by the National Animal Health Laboratory (NAHL). Meanwhile, another six outbreaks were identified in different villages of the same district, affecting a susceptible population of 2191 presenting an average mortality rate of 44%.

Laos has a population of 3.87 million pigs (2017; source: FAOSTAT), where the majority of pigs are reared by producers with very small systems (>80%) with most of the households having less than 10 pigs, which challenges the implementation of any control strategy.



*Map 1. Location of first ASF outbreak in Laos*

A report recently published in the journal of [Preventive Veterinary Medicine written by Holt et al](#) demonstrated the presence of antibodies against foot-and-mouth disease (FMD) and classical swine fever (CSF) (17.2% samples being positive for FMD and 11.2% for CSF), among other diseases, in Laos' pigs population; the challenges the pig production sector in Laos face to prevent and control disease is well established. The authors stated that ASF represented an imminent threat, based on the results that indicate low-input systems, semi-free range practices with poor biosecurity, and the cross-border trade of pork and pork products practices between the countries in the region.

## Vietnam

**In June, two additional Vietnamese southern provinces, Ba Ria - Vung Tau and Lam Dong, have reported ASF outbreaks** despite continuing efforts by the Vietnamese Government (GVN), making it 60 provinces out of a total of 63 that have reported the disease since last February, when the first outbreak was reported in the country. Since then, more than 2.6 million pigs have been culled with the goal to contain the spread of the virus throughout the country, which represents nearly 10% of the country's total pork population. Another fact demonstrating the current difficulties the GVN is facing regarding the implementation of control and mitigation strategies, is the reappearance of ASF in 15 provinces during the last two months (a reappearing outbreak is described as a new case after 10 days of no ASF detection in a specific location or administrative division).

**On June 25, authorities of Dong Nai province, the pig breeding capital of the country, released a statement recording the largest outbreak reported since the start of the epidemic (not yet reported to OIE).** Previous outbreaks have affected mainly small production sites, but now it seems that it has expanded to larger industrial farms, like Phu Son farm, where more than 18,000 animals are raised. Also, last week the government released to the press that around 10,000 pigs are being culled per day, up from 6,000 in previous weeks since early March when the first outbreak hit the province. Hanoi province is the country's second biggest herd, after the southern province of Dong Nai's 2.5 million, where 1.9 million pigs are being raised.

Since early May, the GVN has released several directives issued to update the regulatory framework on ASF prevention and control program (source [GAIN report VM9027](#)). In this context, producers of limited number of pigs are facing the biggest threat from ASF, due to lack the proper infrastructure and biosecurity resources to prevent the disease. According to Vietnam's Ministry of Agriculture and Rural Development (MARD), in 2018, there were about 2.5 million households rearing pigs, that represented 49% of the country's total pig population. Furthermore, despite GVN's efforts, feeding pigs with leftovers/swill from local restaurants, and the inability of farmers to properly dispose of affected pigs due to the lack of burial space, remain as key limiting factors to control the spread of the disease. Central government officials are also encouraging the provinces to restructure their livestock production sectors and diversify herds, shifting to other production systems like poultry and cattle.

**In March, FAO advised Vietnam to declare the outbreak a national emergency, but officials said last week they had no plans to do so.**

*Vietnam has the seventh largest number of pigs in the world, 30 million, and is the sixth largest pork producer. Pig farming provides a livelihood to 2.4 million households, while pork makes up 70 percent of the average household diet, according to official figures.*

## Hong Kong

Hong Kong's government has stated an **"all in, all out"** policy is now in place at all slaughterhouses in the island. This change in policy came after the report of two outbreaks at the same facility within a

few weeks (for further details, see June report). Each time, the slaughterhouse suspended operations for several days to enable the culling of all animals present, the disposal of carcasses, and thorough cleaning of the site.

## China

On June 24, China's Ministry of Agriculture and Rural Affairs (MARA) [released an additional notice](#) on ASF testing at pig slaughtering enterprises. Authorities, while stating that the new testing procedures in place at slaughterhouses have reduced the risk of ASF transmission, have also stated that slaughtering enterprises have not strictly implemented the announced requirements, and there are cases of irregular sampling, insufficient testing, and non-reporting of positive results, which have affected the overall impact of these control measures. Thus, in order to further standardize the detection of ASF at slaughterhouses and ensure the validity and reliability of the test results, MARA supplemented the following requirements for the detection of ASF during the slaughtering process:

1. **Sampling.** In order to further standardize test results according to the **“every pig, every lot, full coverage”** principle, sampling shall be: at slaughtering enterprises, collecting blood samples from each pig to be slaughtered; and if there are sick or dead pigs in a batch, priority should be given to spleen, lymph nodes, and other tissue materials from the dead pig(s) for laboratory testing.
2. **Testing.** Strictly follow regulations. Due to the low sensitivity of the current ASF antigen test strips, such a test should only be used for quick preliminary testing of sick/dead pigs and shall not be used for pooled samples at slaughtering enterprises.
3. **Results.** When a result of pooled samples is negative, the diagnosis is negative; if pooled samples tested positive, the diagnosis is “suspected.” Immediately report it and implement related measures, e.g. disinfection, in accordance with MARA notice No.119.
4. **Handling remaining samples.** Positive samples must be biosafely disposed, cleaning and disinfection be conducted. No individual/facility is allowed to keep, forward, or sell positive samples to other individual/facility. Without approval from MARA, no individual/facility shall isolate ASF virus or conduct any form of animal infection test.
5. **Strengthen supervision.** The veterinary departments at all levels shall establish and improve the supervision and inspection mechanism, strengthening supervisory duties of facility-resident veterinarians, and urge slaughtering enterprises to strictly implement ASF testing requirements.

## EUROPE

### Poland

In mid-June, ASF was confirmed at two more farms in Poland, according to an official report to the OIE from the national animal health agency. In Lublin province, the virus was detected following the death of one pig out of a herd of 24 animals, and after five pigs showed signs of the disease at a farm in Warmia-Masuria. Because of previous outbreaks of ASF in wild boar in these provinces, the area is already subject to special restrictions for disease control.

### Wild boar population outbreaks

ASF outbreaks in wild boars have been reported to the OIE by the veterinary authorities of five European countries over the past week. The highest number of animals affected was reported in Poland (total n=

58). However, the period covered by the report was March 17 to April 4. All the cases were in regions of three provinces — Warmia-Masuria, Masovia, and Lublin — already subject to ASF control measures.

**Hungary** reported 31 new cases in the north and northeast of the country, including one cluster of 24 cases in late May. There have been 25 more ASF cases among wild boar in the south, southeast, and northwest of **Romania**, and two in **Latvia**. In the recent weeks, another six cases of ASF in wild boar population in the southern province of Luxembourg were reported by **Belgium**, according to the official OIE report.

## Article Review

### Do wild boar movements drive the spread of African Swine Fever?

Podgórski T, Śmietanka K.

[Transbound Emerg Dis. 2018 Dec;65\(6\):1588-1596.](#)

This article highlights the need to understand the link between host movements and disease dynamics.

*“The spatial behaviour of hosts can seriously affect the transmission of pathogens and spatial spread of diseases. Understanding the relationship between host movements and disease dynamics is of prime importance for optimizing disease control efforts. African swine fever (ASF), a devastating disease of wild and domestic suids, has been spreading continuously through eastern Europe since 2007. The wild boar (*Sus scrofa*) has been implicated in the epidemiology of this disease, but the role of wild boar movements in ASF dynamics and spread has not been studied and remains largely speculative.*”

*“Contrary to our expectations, we found that movements of wild boar, despite their seasonal variation, were poor predictors of ASF dynamics in space and time. **During the two years of the study, ASF spread gradually at a steady pace of 1.5 km/month without significant changes across seasons**.”*

Authors concluded the main “...factor limiting the influence of host movements on ASF dynamics is the severity of the disease, which quickly hampers extensive movements and restricts disease transmission to only the most immediate individuals.”

**Conclusion:** “Three natural factors constrain direct disease transmission: wild boar social structure, the short duration of low-level virus shedding and high virus-induced lethality, followed by indirect transmission through infected carcasses. **These most likely shape the gradual spread of ASF in space and its persistence in already infected areas**”.

### Simulation of transmission and persistence of African swine fever in wild boar in Denmark

Halasa T, Boklund A, Bøtner A, Mortensen S, Kjær LJ

[Prev Vet Med. 2019 Jun 1;167:68-79](#)

Background: “Wild boar is a main driver of the transmission and persistence of ASFV in the endemic infected countries in Europe. Some European countries free from ASF, such as Denmark and the Netherlands, have limited population sizes of wild boar, but have large swine productions. In these countries, the patterns of transmission and persistence of ASFV in the existing wild boar population, in case of introduction of ASFV, are unknown.”

Objective: “It is important to get a better understanding of ASFV in these wild boar populations, in order to better manage the existing wild boar population and thereby minimize the risk of virus introduction and transmission to domestic pigs, in case of an ASFV incursion.”

**Main conclusion:** “An agent-based spatio-temporal model and simulated the transmission of ASFV within Danish wild boar populations, using actual landscape data. The model predicted that wild boar populations may increase drastically over the next 25 years, if wild boar groups were distributed across both southern and middle Jutland and no mitigation actions were taken...

“The density of the population is an important factor affecting the transmission and persistency of the disease. Model results indicated that ASF epidemics in the simulated populations would generally persist for few months. **However, due to the high stochasticity of the process, in certain situations the epidemics may last for more than one year, posing a serious risk of ASFV introduction to domestic pigs.**”

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## USDA LAUNCHES FERAL SWINE ERADICATION AND CONTROL PROGRAM

USDA is offering \$75 million in funding for the eradication and control of feral swine through the Feral Swine Eradication and Control Pilot Program (FSCP) in a joint effort between USDA's Natural Resources Conservation Service (NRCS) and Animal and Plant Health Inspection Service (APHIS).

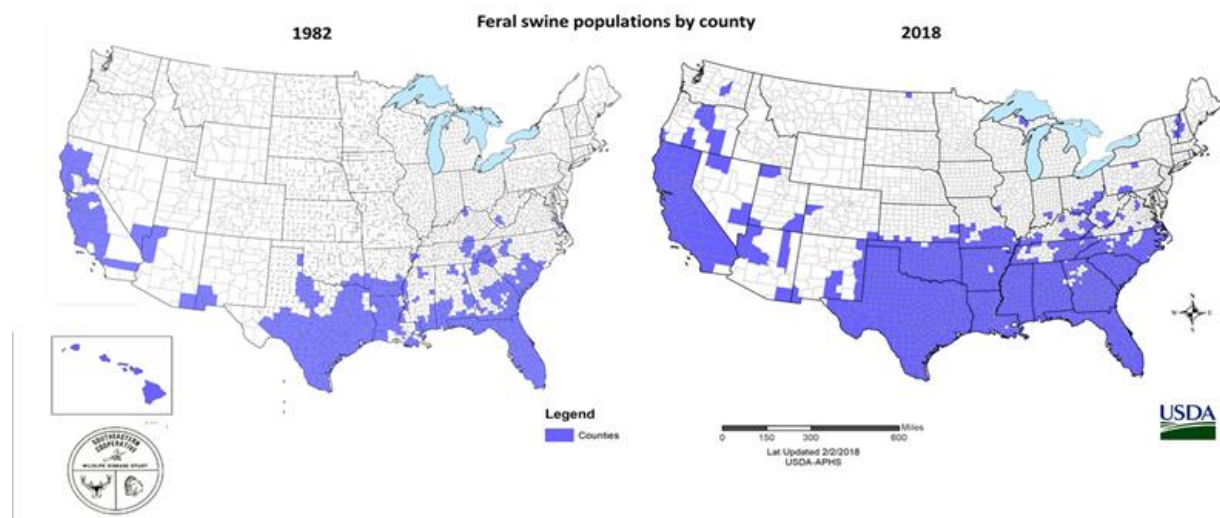


Figure 1. Distribution of feral pigs population by county. Evolution: 1982 → 2018 (Source: USDA).

Feral swine don't recognize boundaries and are considered one of the world's worst invasive alien species. In the US, the USDA not only estimates that the feral swine population has expanded its distribution from 17 states in 1982 to 41 states in 2014, but also, has significantly increased its density.

Besides the devastating damage this species inflicted on US agriculture, currently there are increasing concerns regarding the role of it in the spread of diseases, including ASF. Based on the well-documented lessons learned of the role of wild boar in the persistence of ASF through all Europe, there is a clear urge to implement control strategies for this species, as a critical component of the preparedness plan for ASF in US.

Most recently, Dr. Dale Nolte, program manager for the USDA APHIS National Feral Swine Damage Management Program, based out of Fort Collins, Colorado, spoke at the ASF Forum in Ottawa, Canada,

about the national feral swine program that encompasses operations, research, disease monitoring, communication, regulation and evaluation, and monitoring. Nolte says the ASF Forum provided opportunities to connect with Canadian officials about working together to establish better collaborations, similar to how we've been working closely with officials in Mexico monitoring the southern border for the past few years to get a better understanding of feral swine movement between the countries.

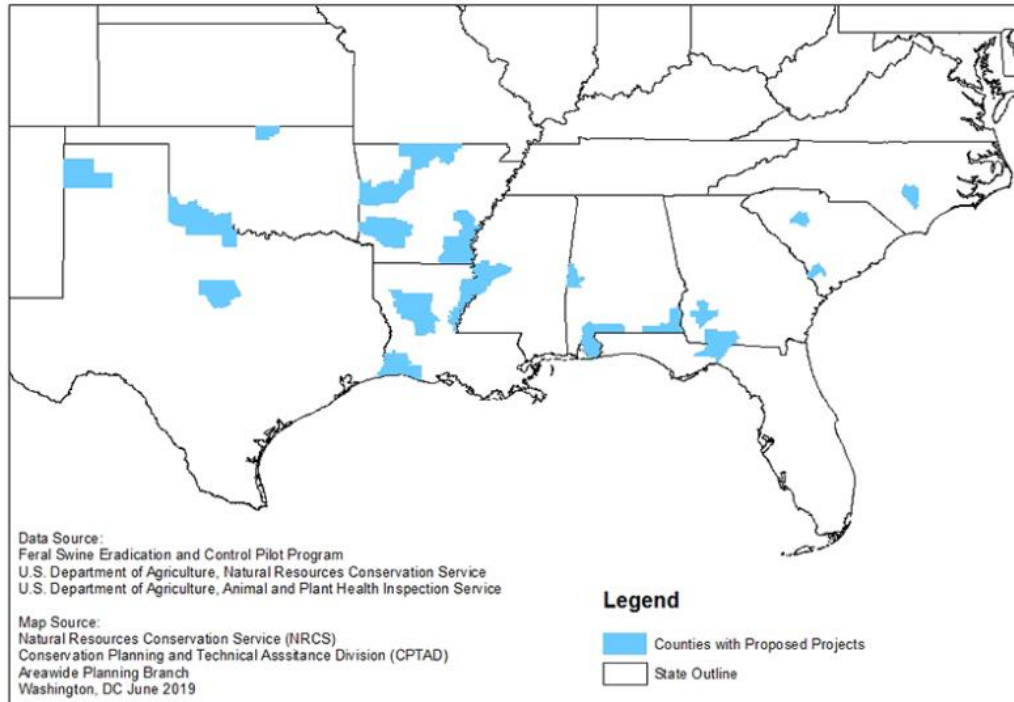


Figure 2. Counties with FY2020 proposed pilot projects for the Feral Swine Eradication and Control Pilot Program.

The FSCP was established by the 2018 Farm Bill to respond to the threat feral swine pose to agriculture, native ecosystems, and human and animal health. USDA is focusing efforts through this pilot where feral swine pose the highest threat. Pilot projects will consist broadly of three coordinated components: 1) feral swine removal by APHIS; 2) restoration efforts supported by NRCS; and 3) assistance to producers for feral swine control provided through partnership agreements with non-federal partners.

## Article Review

### Potential role of wildlife in the USA in the event of a foot-and-mouth disease virus incursion

Vienna R Brown and Sarah N Bevins

[Vet Rec. 2019 Jun 15;184\(24\):741](#)

In this article authors explored and summarized, "...US vulnerabilities for viral incursion and persistence which focuses specifically on the possible role of wildlife and feral pigs," which are easily transferable from FMD to other FADs contexts. "Wildlife species and **feral pigs** present an added complexity in the case of FMDV or any other FAD introduction as they are typically not closely monitored or managed and there are significant logistical concerns pertaining to disease surveillance and control in these populations.



*“The introduction of FMDV into the USA would be devastating for both livestock and producers. If the event was limited to domestic livestock, there is historical precedent demonstrating that control and eradication is possible; however, in the event FMDV was either introduced to feral or wild species or spilled over from domestic livestock, successful control of the disease would become more complicated.”*

Recommendations: *“The development of non-invasive surveillance methods, such as baited ropes, aerosol sampling and thermography, is important as traditional sampling methods for wild and feral species are both labor and cost intensive which minimizes its utility.*

*“Additionally, characterizing and validating PCR methods in wildlife would be crucial to the development of robust diagnostics.”*

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