

White Spot Syndrome Virus (WSSV) In Louisiana Crawfish

White Spot Syndrome Virus (WSSV) has been confirmed for the first time in Louisiana in crawfish from a pond in St. Martin Parish, two ponds in Vermilion parish and a pond in St. Landry parish. This disease seems to affect mostly medium to large crawfish. The virus can apparently cause significant losses in ponds. Symptoms include sluggish crawfish that don't move much once they are dumped from the trap. They do not pinch hard and most cannot walk. There are no color differences or obvious signs other than weakness and slowness. Some dead crawfish are noticeable in the traps while others are noticeable in the shallow water along the edge of the pond. This viral disease affects only crustaceans like crawfish and shrimp. **Humans are not susceptible to the virus, and consumption of infected crawfish does not endanger the health of humans.** Following are some facts about the disease:

Where did the disease come from? The disease was first reported in farmed shrimp in Thailand and then China in 1992-93. In 1995, it was reported in shrimp farms located in south Texas and in South Carolina. In 2004 it was confirmed in a shrimp farm in Hawaii. It is called "white spot syndrome" because in infected shrimp, white spots develop in the shell. WSSV has been found in wild shrimp and crabs off-shore in the Gulf of Mexico and near shore in Texas, Mississippi, Georgia and South Carolina during 1999-2002.

This disease can infect a wide range of crustaceans, including (but not limited to) shrimp, crabs, lobsters, and crawfish. Although some research has been done in different countries involving artificial infection of crawfish species, this is the first report of a natural infection of crawfish in the United States. The exact source or our present problem in farmed crawfish is unknown.

Can an infected pond be treated to eliminate the infection? Because the disease is caused by a virus, there is no anti-viral treatment or cure that can be effective in a pond or rice field environment.

What animals are affected in Louisiana? In Louisiana the only species in which the disease has been confirmed so far is in farmed crawfish, in freshwater ponds. There are, however, numerous shrimp, crab, crawfish and other species in our coastal and inland waters which could serve as hosts for WSSV.

Do we know if the free-ranging crawfish in marshland and bayou areas are free of the disease? No. We do not yet know if this disease is present in wild populations of crawfish in our state. The Louisiana Department of Wildlife and Fisheries (and their federal counterparts) will work on testing crawfish harvested from wild venues for the disease. The marine shrimp in coastal estuaries will also be tested for WSSV.

How widespread is the problem among the crawfish farmers? Thus far, it has been disclosed in one pond (in St. Martin parish), two in Vermilion and one in St. Landry parish. We will not

know how widespread the problem is until USDA-APHIS or LDAF have completed surveillance assessments and testing of the crawfish-producing areas in the state.

Can WSSV infect humans? Humans are not in any way susceptible to this virus. The consumption of infected crawfish does not endanger the health of humans.

What are the signs and symptoms of the disease in crawfish? There are no visually conspicuous signs of the disease in an affected crawfish. In shrimp, WSSV causes the formation of white spots on the shell (carapace), but that has not been observed in crawfish. The virus can invade many organ systems in the crawfish, causing a high death loss. An affected crawfish may be lethargic or weak, but there are no other signs of the disease that are apparent.

What should a crawfish farmer do if he/she thinks that he/she may have a WSSV disease problem? Report the problem to the local county agent. An increase in death loss may be due to a wide variety of problems other than WSSV, such as low dissolved oxygen (DO) content in the water, pesticide toxicity, etc. The county agent will contact the AgCenter aquaculture specialist for assistance if it is indicated.

How is the disease diagnosed in crawfish? Whole crawfish are submitted to the laboratory for the diagnostic procedure. The virus is confirmed in crawfish by a special test (called PCR, or polymerase chain reaction), in which the genes (DNA) of the specific virus causing the disease are identified. This test requires 24 hours to complete.

How can the disease be spread to a pond or rice field?

1. Feeding infected shrimp to crawfish or using them as bait in crawfish traps.
2. Introducing infected crawfish (trapped from an infected pond or wild marshland) as stock into the pond.
3. Shorebirds carrying infected crawfish from one place or the other and possibly regurgitating infected crawfish prior to digesting them.
4. Infected crawfish migrating from one pond to another.
5. Moving contaminated equipment (traps, boats, etc.) from an infected location to a clean pond.
6. People caring the virus from one place to another on their boots or personal equipment.
7. This disease cannot be spread by bird feces. No viable WSSV virus was found following passage through the gut of either sea gulls or chickens.

But how did this disease get into crawfish ponds in Louisiana? At this point no-one can say with any certainty. There are many possibilities. Many countries export both pond-raised and wild shrimp to the United States. A study of imported shrimp indicates occurrence of WSSV may be very high in these products. For example, in one study ten different lots of imported frozen shrimp tails were screened for WSSV. In 8 of 10 samples tested, WSSV was detected.

Live shrimp were then exposed to these WSSV- positive tissues either as food or by injection. WSSV resulted in 100% mortality in the indicator shrimp in four of nine tests. The results of the study indicated that the virus was infectious to previously healthy live shrimp either by ingestion or by injection. Another recent study suggested an appreciable proportion of the shrimp sold in Massachusetts' supermarkets are carrying WSSV, and this constitutes a substantial risk of importation of this virus into the local environment. Effluents or solid waste from re-packing contaminated shrimp could create a risk of virus transmission to susceptible species and carriers in the natural environment.

Imported frozen shrimp used as bait for coastal fishing is also a hazard. Leftover bait shrimp that is discarded could be picked up by wild shrimp or crabs, thereby creating immediate risks for those populations and spread to others. The same risk to wild crawfish exists when frozen imported shrimp are used for bait in inland waters. WSSV is highly infectious for most known species of marine shrimp and natural infections also occur in many species of crabs, lobsters and prawns and other crustaceans, although they often are not lethal. Shrimp stocked with infected carriers acquire active infections within 36-48 hours.

Over 40 known species of crustaceans have been documented to carry the disease. Many more are probably capable of becoming carriers if exposed. Even some aquatic insect larvae have been shown to carry the virus and several species of crabs and shrimp in the wild have been found infected with the virus without displaying any of the clinical signs, acting as a continual reservoir of infection. Whether shrimp or crawfish, once wild crustaceans are infected, they can serve as a source of the disease for farmed animals, and infected farms can in turn release the disease back into the environment.

What happens after the infection has been disclosed in a pond or rice field? How can an infection in a pond be cleaned up? How can a crawfish farmer be sure that the infection has been cleared from his ponds or fields? All those procedures are being finalized at this time. Future newsletters will address these procedures and any important updates as they occur.

How can an individual crawfish farmer best prevent the infection? Acquire crawfish for stocking the pond/field from sources that have been shown to be free of WSSV. If there is a problem with shorebirds at the location, consult with the local Louisiana Department of Wildlife and Fisheries representative. Additional recommendations are continuously being updated – see the [crawfish](#) web pages at www.lsuagcenter.com or contact your [County Agent](#).

For more information contact [Mark Shirley](#), fisheries agent, [Greg Lutz](#) or [Robert Romaine](#), aquaculture specialists, at the LSU AgCenter.