

EXPANSIVE IMPACT OF VECTOR DISEASE

In addition to The Bug Campaign's work to the study of human and creature vector borne diseases resulting from infections most often from the bite of a mosquito, tick or other 'bug', we now also turn to other types of transmissibility and targets—

Pathogen transfer from a bite are biological, but there are also:

- vertical or congenital, that is 'parent to offspring',
- mechanical ' when the pathogen is external to the vector, carried and infect a new host through various physical contacts



Vector diseases can contaminate our entire ecosystems, creatures (Fauna), plant life (Flora) and contaminate water, soil and air. Creature health, food supply and our natural resources are all threaten.



At stake is creature health including important organisms, pollinators, food supply, marine life and our natural resources. The threat to natural resources and our environment allows further pollution, the safety of our environment, prominently the carbon dioxide they reduce from the atmosphere, lessening greenhouse gases.

Ecosystems – Terrestrial and Aquatic

- Plant vector organisms feed on and transfer fungal, bacterial, viral as well as a bacteria-like germ called phytoplasma which lack a cell wall. Often the transmitting vectors are insects, mites, nematodes, or other small animals that feed on plants.
- Vectors include aphids, whiteflies, leafhoppers, planthoppers, beetles, psyllids also called a jumping plant lice insect, mealybugs and thrips.
- These diseases cause large scale infections, travel with rain, from infected equipment or handling by workers; compost can absorb and be a source of new infection as can infected cutting to a new area. In dense environments, they can spread plant to plant. Infected seeds will germinate into infected plants. If soil is contaminated with disease it can spread through plants' root systems or by irrigated water.



Leafhopper

Aphid

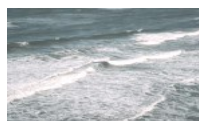
Aphids alone can transmit over 300 viruses by sucking plants' sap potentially destroying a wide range of vegetation from broccoli, brussels sprouts, cabbage, collards, kale, cucumbers, eggplant, potatoes, squash, tomatoes, watermelon, bananas and can also ruin grains like barley, wheat and oats, and attack corn and grasses including pasture grasses.



Whiteflies are responsible for an group of viruses called begomoviruses which can destroy entire fields of tomato crops. vegetables, grain legumes, cotton, papaya, watermelon, and rose plants.

Leafhoppers can transmit bacteria and phytoplasma, can acquire, be a reservoir and further transmit to other plants. They pierce rice plants, feed on them doing considerable damage.

Mites can carry viral pathogens and phytoplasma transmit fungal spores. Wheat is a target of wheat streak mosaic virus. And, while some beneficial nematodes can help control vector infections, others like root-knot nematodes carry fungal spores. Mites are viral pathogen carriers and phytoplasma transmit fungal spores. Both infect a wide variety of vegetation and fruits.



Marine

Infected marine plant life impact pollution, sewage, commercial shipping, aquaculture, acidification, salinity, aided by rising temperatures.

These infections can affect seaweeds, seagrasses, and other aquatic vegetation, leading to ecological imbalances and economic losses in marine ecosystems. Some examples of marine plant life vector infections include Seagrass Wasting Disease delivered by a protist and affecting ecosystems since seagrass meadows plays a vital role in carbon sequestration. It can be transmitted by water currents and boating which can spread infected plant material. Another is Sea Lettuce Disease which can be viral or bacterial spores that decrease the biomass of algae.

Control Techniques

Warm, humid weather stimulates growth and disease replication; the health of the plant plays into the susceptibility. The specific plant and pathogen targets must be considered. Alternate to insecticides are biological controls - natural predators that feed on vectors. Work is being done as cultivars through cross-breeding with genetic engineering to resist infection.

Ecosystems—Terrestrial Fauna

Swine pox and African swine fever (ASF) are vector-related diseases that affect pigs. These diseases can be transmitted by insects and other arthropods. Pork must be **properly cooked** to be eaten but disease transfer is possible from close contact with fluids, blood, inhalation.



Cattle infected with vector-borne diseases can transmit those diseases to humans through direct contact, consumption of contaminated products, or bites from infected insects/bugs. Beef meat properly cooked and pasteurized milk is reported to be safe.

Both industries suffer from the loss of swine and cattle and cause economic decline.

Ecosystems—Aquatic Fauna - Examples of vector disease

- White Spot Disease (WSD) is the result of a viral pathogen spread by vectors including marine worms, mollusks, and microscopic rotifers as well as crustaceans often found with high production settings. Birds can transmit disease by releasing infected prawns. WSD is a major threat to the shrimp industry.



—WSD impacts several crustaceans be they in marine, brackish or freshwater.

—Control measures include the use of disease-free post-larvae, quarantining new fish and avoiding tank-to-tank transmissions.



- Yellow head virus targets shrimp and is highly contagious.
- Taura syndrome virus (TSV) also severely impact shrimp causing pale red coloring and death especially in juvenile shrimp.
- Crustaceans are vulnerable to vector diseases. Lobsters and others are impacted by Gaffkemia and Milky Haemolymph Disease (MHD) in the US and other countries. Lobster diseases often impact the shell. It is reported that properly cooked, the lobster remains safe to eat, but not the tomalley (the green substance).

Researching and study notes sourced from chatgpt, generative AI, National Library of Medicine "Plant Physiology" Jan. 2019, Science Direct 'Begomoviruses' 2023, The American Phytopathological Society (APS), Nov. 18. 20190 <https://doi.org/10.1094/PHYTO-07-19-0273-FI> Marine diseases and the Anthropocene: Understanding microbial pathogenesis in a rapidly changing world, Jennifer Hudson¹, Suhelen Egan^{1,✉} (Crain et al., 2009; Doney et al., 2012; Gissi et al., 2021; Gunderson et al., 2016) 2009 Scient Direct, White Spot Syndrome,

THE INFORMAITON PRESENTED IS BASED UPON SEVERAL SOURCES (AS NOT-ED) BUT AS WITH ANY NEWLY INVESTIGATED RESEARCH, INSUFFICIENT AND POSSIBLY NCORRECT DATA IS POSSIBLE AND THERE IS MUCH MORE TO REPORT. ALWAYS CHECK WITH MEDICAL & OTHER PROFESSIONALS.



BEYOND HUMAN DISEASE VECTOR INFECTED FOOD SUPPLY

TERRESTRIAL & AQUATIC PLANT LIFE
TREES, PLANTS, VEGETATION (FLORA)

TERRESTRIAL & AQUATIC CREATURES
SHRIMP, LOBSTER—CRUSTACEAN (FAUNA)
(INSERT—DATA ON AVIAN FLU)



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BIRD FLU AND BIRD INFLUENZA

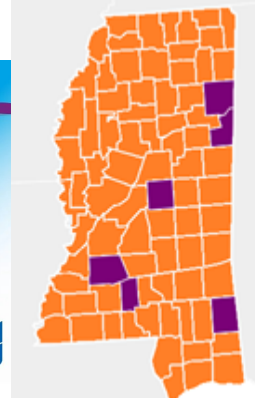
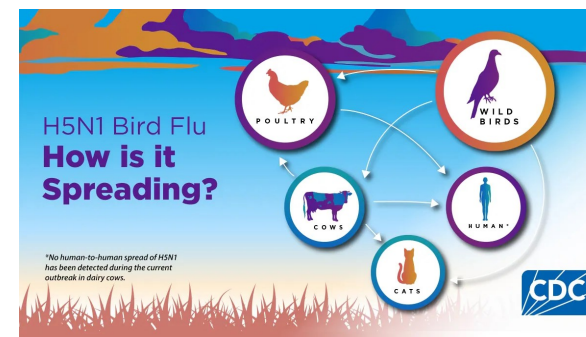
In Mississippi and Beyond

- Bird Flu is generally put into categories of either Highly Pathogenic or Low Pathogenicity influenza which addresses that strain's level of contagion.
- A commercial chicken breeder reported positive infection in Greene County for H5N1, the highly contagious strain. There have also been reports in Copiah County. Since 2022, counties reporting bird flu also include: Lawrence, Leake, Lowndes & Monroe.
- Some 68 persons have contracted bird flu. In 2024 one person in Louisiana died shortly after contracting it. Initially thought to be the H5N1 strain, recent reports are linking it to the D1.1 strain. In November of 2024, a child was infected with H5N1 from consuming raw milk.
- A report published today notes that a strain of bird flu never seen before in the United States has been detected among poultry at a California farm. It is a highly pathogenic H5N9, distinct from the previously reported H5N1. It is spreading to dairy cow and poultry farms in the U.S..
- In addition to cattle described above, cats are contracting bird flu, as of February, 2025, over 900 herds of cattle and more than 80 cats.

BIRD FLU AND BIRD INFLUENZA

- The source of 2024-2025 bird flu outbreak is from the H5N1 virus, considered the most common. There are two categories of this so-called Influenza A virus: low pathogenic (LPAI) and high pathogenic (HPAI). An infected bird sheds the virus in saliva, nasal secretions, and feces. There are several subtypes that have specific targets. The H5N1 can infect cattle and swine.
- Wild birds such as geese can serve as reservoirs for these viruses. Swine flu is not the same as bird flu, but swine can be infected by it and several other viruses. Cattle can be infected by bird flu and many other pathogens.

The CDC has published this transmission cycle:



1/25 CDC map identifying Monroe, Lowndes, Leake, Copiah, Lawrence & Green counties reporting cases

- The CDC (Center for Disease Control) notes that both the chicken and eggs, **properly cooked** are safe even if it had this infection.
 - The bird flu is a vector disease—because it can be transferred to humans and other creatures by mechanical means; an insect such as a fly or beetle can land on infected material as a contaminated source and transfer it through inhalation or ingestion.
- ⇒ Symptoms of bird flu in human can range from mild to severe. Symptoms include: eye irritation, fever, respiratory, headaches, fatigue, runny nose, and encephalitis. See a doctor immediately. Symptoms can begin 1-5 days or up to 2 weeks.