

## BIRDS



### AVIAN INFLUENZA

Avian influenza (AI), less formally known as bird flu, is endemic in wild bird populations, particularly waterfowl and shorebirds. There are 144 subtypes of AI, named for their protein hemagglutinin (H) and neuraminidase (N).

**Symptoms:** Most often, wild birds are infected with these forms and show little or no sign of illness. Low pathogenic and nonpathogenic influenza result in low to zero morbidity and minimal mortality. Conversely, high pathogenic avian influenza, also known as HPAI, is highly virulent, often resulting in high morbidity and mortality in birds. AI is rare in humans, but results in flu-like symptoms; only a lab test can confirm AI.

**Transmission:** Avian influenza is released naturally through the intestinal tracts of birds. The principal means of transmission of AI among bird species is through secretions and feces. Furthermore, the virus can remain viable in water, especially at colder temperatures. The prevalence of avian influenza varies depending on species. In waterfowl, AI is most prevalent in wild birds during late summer and early fall. Infection rates tend to be lower outside of those periods.

**Prevention:** Do not feed waterfowl – it is against the law! This seemingly harmless activity results in overcrowding, spread of disease, malnutrition, and habitat degradation. In addition, high concentrations of birds can result in degraded water quality. Humans can contract AI by coming into contact with bird feces. *If you see an unusually large number of dead birds, you should call the DFW or RIDEM Division of Law Enforcement at (401) 222-3070.*

### Waterfowl hunters should take the following simple precautions:

- Do not handle or butcher game animals that are obviously sick or found dead.
- Do not eat, drink, or smoke while cleaning game.
- Wear rubber gloves and washable clothing while cleaning game.
- Wash your hands with soap and water immediately after handling game.
- Wash tools and working surfaces with soap and water, then disinfect with a 10% solution of chlorine bleach.
- Cook game meat thoroughly to reach an internal temperature of 165° F.

For more information about avian influenza [click here](#).

### HISTOPLASMOSIS

Histoplasmosis is a fungal disease associated with the droppings of birds and bats. It persists in the soil and, when disturbed, becomes airborne.

**Symptoms:** Symptoms in humans may include fever or congestion and, in some cases, a mild infection that may go unnoticed. The disease is rarely fatal but people with compromised immune systems may be at risk.

**Transmission:** Inhalation of dust containing spores from bat and bird droppings can cause an infection in the lungs.

**Prevention:** Do not sweep bat or bird droppings without protective clothing or an appropriate respirator. Wetting droppings before and during clean-up will reduce dust and most household disinfectants and bleach solutions will kill the spores.

For more information on histoplasmosis [click here](#).



## MAMMALS

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### CANINE DISTEMPER

Canine Distemper is a virus that is prevalent in canids and other wildlife such as foxes, raccoons, skunks and coyotes. It is highly contagious and impacts the respiratory, gastrointestinal and neurological systems. Humans are not affected.

**Symptoms:** Canine distemper causes respiratory distress, diarrhea, and neurological problems. The symptoms may resemble those of rabies. The infection is often fatal.

**Transmission:** Canine distemper can be transmitted through airborne exposure, such as coughing and sneezing, or passed through shared water bowls or food dishes.

**Prevention:** Although rare in Rhode Island, domestic dogs are highly susceptible to canine distemper and should be vaccinated. There is no cure for an animal once it is infected. Keep pets away from wildlife and do not feed pets outside.

For more information on canine distemper [click here](#).

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### CHRONIC WASTING DISEASE

Chronic Wasting Disease (CWD) is caused by prions (pronounced: “pree-ons”), or abnormal proteins that produce lesions in the brain and nervous system of deer, and other members of the family Cervidae.

**Symptoms:** Infected animals become emaciated, lose bodily functions and display abnormal behavior.

**Transmission:** CWD is transmitted through physical contact (nose-to-nose contact and decaying carcasses), environmental contact (the area where a carcass decomposed), or through infected feed. CWD may persist in the soil after a carcass has decomposed. CWD is transmissible among deer but as of now, there is no evidence that humans or livestock can be affected. Nevertheless, it is not advisable to eat the meat of animals known to be infected.

**Prevention:** Surveillance for CWD has been conducted in Rhode Island since 2002 and it has not been found in Rhode Island thus far. To keep our deer population CWD-free, regulations have been enacted regarding the feeding, transport and importation of deer and deer parts, including scents/lures containing urine, gland oil, or other bodily fluids.

For more information on CWD and recommendations for hunters [click here](#).





## MAMMALS

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### RABBIT HEMORRHAGIC DISEASE

Rabbit hemorrhagic disease is a fatal disease that affects both wild and domestic rabbits. The disease is caused by multiple virus strains with Rabbit Hemorrhagic Disease Virus Serotype 2 (RHDV2) being the detected strain spreading in North America. RHDV2 has been detected in Washington, New York City, New Mexico, Arizona, Texas and Colorado. There is no current vaccine available in the US.

**Symptoms:** Symptoms include fever, loss of appetite, respiratory signs or nervous behavior. Some rabbits show no symptoms until they suddenly die from internal bleeding, producing a blood-stained nose as a result.

**Transmission:** RHDV2 can spread through direct contact or exposure to an infected rabbit's excretions or blood. The virus can survive and spread on food, water, and contaminated materials such as clothing. RHDV2 does not impact human health.

**Prevention:** Avoid contact between pet rabbits and wild rabbits and do not introduce new rabbits from untrusted sources. Wash hands with warm soapy water before and after entering rabbit enclosures. Sanitize equipment and cages with 10% bleach solution when moving them on or off the premises. Never release pet rabbits into the wild.

For more information on RHDV2 [click here](#).

For proper disinfection procedures [click here](#).

***Immediately report suspected RHDV2 infections (ex. multiple dead rabbits) to:***

Dylan Ferreira, RIDEM Senior Wildlife Biologist | [dylan.ferreira@dem.ri.gov](mailto:dylan.ferreira@dem.ri.gov)

Scott N. Marshall, DVM, Rhode Island State Veterinarian | [scott.marshall@dem.ri.gov](mailto:scott.marshall@dem.ri.gov)

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For more information on histoplasmosis [click here](#).



## MAMMALS

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### MANGE

Mange is a common disease of canids and other wildlife such as coyotes, squirrels, raccoons and foxes. It is caused by a mite (*Sarcoptes scabiei*) that burrows into the skin.

**Symptoms:** Mange causes intense itching and hair loss. Animals with mange may become weak and emaciated, and eventually die. Dogs are susceptible to infection, and humans may get a temporary rash after exposure to the mite.

**Transmission:** Coming into contact or close quarters with an infected animal allows the mites to move from one host to another.

**Prevention:** Keep pets away from wildlife and do not feed pets outside. Leaving out pet food will attract wildlife into your yard and increase the risk of disease transfer.

For more information on mange [click here](#).

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### RABIES

Rabies is a disease caused by a virus that affects the nervous system of mammals and can be fatal without prompt medical treatment. First confirmed in Rhode Island in 1994, the rabies virus is now endemic and can be expected to occur in wild mammal populations throughout the state. Vectors for rabies include; coyotes, raccoons, foxes, bats and any other mammal, even deer. Though it is possible for opossums to carry rabies, it is very rare due to their low body temperature which is inhospitable for the virus.

**Symptoms:** Infected animals can exhibit a wide range of symptoms, from aggressiveness and rage, to aimless wandering, lethargy, weakness of the hind legs, and loss of awareness. Some animals show no symptoms and the only way to confirm rabies is through laboratory testing.

**Transmission:** The rabies virus is typically transmitted from an infected mammal to another mammal by a bite wound. The virus passes from the saliva of the infected mammal into the bloodstream of another, eventually moving through the central nervous system to the brain. Although rare, it is possible to become infected without being bitten, for example by having infected saliva come into direct contact with an open wound or eyes. It is possible, although rare, for humans to contract rabies. Those few cases that occur are because people did not recognize the risk and did not seek medical advice.

**Prevention:** Never attempt to capture or handle a raccoon or other wild mammal whether it looks sick, injured or healthy. Any contact between a raccoon or other wild mammal and a person should be reported to a physician immediately. Any contact between a domestic animal and wild mammal should be reported to your veterinarian and local animal control officer. Any bat that is found within a home, especially a bedroom, where there are pets, or a person who is unable to communicate, should be tested for rabies.

For more information on rabies [click here](#).

**All possible rabies exposures should immediately contact the Department of Health Rabies Hotline: (401) 222-2577**  
**For help removing a bat from your house contact DEM Division of Law Enforcement: (401) 222-3070**



## MAMMALS

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### RACCOON ROUNDWORM

*Baylisascaris procyonis*, also known as “raccoon roundworm,” is a nematode found in the small intestines of raccoons. Not only is it a human health risk, but it can be harmful to other animals as well.

**Symptoms:** Raccoons do are not impacted by the worms, but human symptoms include nausea, liver enlargement and lack of coordination. The larvae can affect the central nervous system, and attack various tissue such as the brain, eyes, heart or lungs, and cause severe or life-threatening health implications.

**Transmission:** The nematode’s eggs are shed in the raccoon’s feces. If ingested by another raccoon, the larvae migrate to the intestine and develop into adult worms. If ingested by humans, the larvae can spread throughout the body. This is more common in children who are more likely to put dirt or other possibly contaminated materials into their mouths.

**Prevention:** Raccoons should not be fed or encouraged to feed on porches and their feces should not be allowed to accumulate in areas where people live or spend time. Removal of large amounts of raccoon feces should be done by professionals with appropriate safety equipment.

For more information on raccoon roundworm [click here](#).

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### WHITE-NOSE SYNDROME

White-nose syndrome (WNS) is a deadly disease that affects bats during hibernation and is caused by the fungus *Pseudogymnoascus destructans* (Pd). The fungus occurs in the cold, humid environments of caves and mines, habitats used by bats for hibernation. Humans are not affected by WNS.

**Symptoms:** The disease is so named for the white, “fuzzy” appearance often seen on the muzzle, forearms, or wings of affected bats during hibernation. The fungus damages skin tissues, disrupting the bats metabolism, causing dehydration, and depletion of their fat reserves. Symptoms often include deterioration of wing membranes (patagium) and uncharacteristic behavior such as early arousal from hibernation and flying outside during the daytime in winter, presumably in search of food or water. This fungus has killed over 6 million bats.

**Transmission:** It is suspected the fungus was accidentally carried over from Europe, and was first documented in New York in 2006. It is primarily transmitted from bat to bat through direct contact, or from an infected bat to the cave or mine environment, thus infecting healthy bats when they enter these sites. Equipment, such as boots, can also transfer the fungus from an infected area to a new location.

**Prevention:** Do not enter sites where bats are hibernating or are known to hibernate to minimize disturbance and prevent further spread of WNS. If you must enter one of these places, ensure that shoes and other equipment are sanitized before and after.

For more information on WNS [click here](#) and [here](#).





## REPTILES & AMPHIBIANS

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### CHYTRID FUNGUS

Chytridiomycosis is an infectious disease caused by the chytrid fungus (*Batrachochytrium dendrobatidis*) that has devastated amphibian populations world-wide. The chytrid fungus causes thickening of the normally permeable skin, disrupting an amphibian's ability to absorb water and breathe. This disease has caused declines in over 500 frog and salamander species. This fungus does not affect humans.

**Symptoms:** Amphibians infected with this fungus may be lethargic, swim in circles, sit with legs outstretched or bask in hot temperatures, when healthy amphibians are hiding. Mass die-offs caused by chytrid fungus have been observed around the world.

**Transmission:** The fungus is spread through direct or indirect contact with contaminated items. Walking through an infected area has the potential to spread the disease to an uninfected area.

**Prevention:** To avoid spread of this disease, all equipment should be washed with soap and water, bleached and scrubbed in a 3% bleach solution and dried in the sun, before moving between wetlands. This includes boats, paddles, shoes and anything else that comes into contact with the water. Never relocate an animal, it is illegal and can transfer disease to new locations.

For more information [click here](#).

For proper disinfection procedures [click here](#).

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### RANAVIRUS

Ranavirus is an infectious disease affecting reptiles, amphibians and fish with a 90-100% mortality rate. There are several different kinds of Ranavirus that impact species at different levels. This disease is believed to be responsible for many recent massive mortality events around the world and unchecked could eliminate entire species.

**Symptoms:** Amphibians infected with ranavirus may display weak or erratic swimming, hemorrhaging in the skin, especially by the hind legs and vent, gaping for air and lethargy. Reptiles, specifically turtles, will display weakness, have swollen eyelids, ulcers on their feet, and discharge from the nose and mouth. Snakes and lizards can develop skin lesions.

**Transmission:** This disease is spread direct contact or exposure to infected water or soil. Walking through an infected area without thoroughly cleaning equipment will carry the disease to an uninfected area.

**Prevention:** To avoid spread of this disease, all equipment should be cleaned with soap and water, bleached and scrubbed in a 3% bleach solution, and allowed to dry in the sun, before moving between wetlands. This includes boats, paddles, shoes and anything else that comes into contact with the water. Never relocate an animal; it is illegal and can transfer disease to new locations.

For more information [click here](#).

For proper disinfection procedures [click here](#).



## REPTILES & AMPHIBIANS

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### SNAKE FUNGAL DISEASE

Snake Fungal Disease (SFD) is believed to be caused by the fungal pathogen *Ophidiomyces ophidiicola* which causes dermatitis in snakes. This fungal disease has only recently come to light and studies are still underway to determine how the fungus is transmitted. Currently, there have not been confirmed cases in Rhode Island, but the distribution is still unclear.

**Symptoms:** SFD affects the skin of snakes, the symptoms depend on the species and the severity but can include: cloudy/opaque eyes, subcutaneous nodules on skin, thickening of scales and scabbing, abnormal molting, facial swelling and skin ulcers.

**Transmission:** Studies are still determining how this disease is spread. In the meantime, anyone who handles snakes is encouraged to clean equipment thoroughly between individuals.

**Prevention:** Snakes can be treated individually with anti-fungal, thermal and nutritional therapies, however, this is not a practical solution for large populations. Any suspected infections should be reported to the RI Division of Fish and Wildlife. It is illegal to relocate snakes, any animal that is moved from one place to another has the potential to spread disease.

For more information [click here](#).





## TICKS & MOSQUITOES

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### LYME DISEASE & OTHER TICK-BORNE ILLNESSES

Lyme disease is transmitted by the tick *Ixodes scapularis*, also known as the deer tick or black-legged tick. Other diseases transmitted by ticks to humans in Rhode Island include babesiosis and ehrlichiosis, caused by a number of different bacteria in the genus *Ehrlichia*.

**Symptoms:** Initial symptoms for Lyme vary, but can include a red circular rash around the tick bite, and/or flu-like symptoms. Babesiosis does not always show symptoms but can cause malaria-like symptoms in some. Ehrlichiosis causes fever, chills and headaches. Without treatment, these can all be potentially fatal.

**Transmission:** All three of these illnesses are transmitted through tick bites. Black-legged ticks can transmit all three of these illnesses as well as anaplasmosis and Powassan virus. The lone-star tick carries ehrlichiosis and other illnesses and the American dog tick can carry Rocky Mountain spotted fever.

**Prevention:** Wear long sleeves and pants when outside. Treat clothing with insect repellent. Check for and remove any ticks as soon as possible. Early treatment with antibiotics is critical, if untreated, symptoms may progress to include arthritis and neurological problems. If you suspect you have Lyme disease, contact your physician.

For more information [click here](#).

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### MOSQUITO BORNE ILLNESS

Mosquitoes that carry Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) can be found in Rhode Island from early spring until the first hard frost. To date, there have been no species of mosquito detected in Rhode Island that carry Zika Virus.

**Symptoms:** EEE causes brain infection (encephalitis) and though rare, has a 30% mortality rate. WNV rarely results in symptoms but can cause fever and headaches and has a 1.5% mortality rate.

**Transmission:** Both illnesses are contracted through the bite of an infected mosquito. Mosquitoes obtain the virus from avian hosts and act as a bridge, transmitting the disease to humans. Horses can also contract EEE but they are considered to be a “dead-end” host, meaning mosquitoes cannot pass the virus from horses to humans or any other animals. ***If a dead bird shows no signs of trauma (broken wing, bloodied, etc.), or if the bird has not been dead for more than 24 - 30 hours, or does not show signs of decomposition call the RIDEM hotline for dead birds (401) 788-3698.***

**Prevention:** Wear long sleeves and pants and put on insect repellent when outdoors. Take measures to control mosquitoes indoors and outdoors. Remove standing water around houses where mosquitoes could lay eggs and ensure screens are secure on all open windows.

For more information on mosquito-borne illness and prevention [click here](#).





## FISH

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### LARGEMOUTH BASS VIRUS

Largemouth Bass Virus (LMBV) is a kind of ranavirus that affects fish. There are several different kinds of ranavirus that impact fish, reptiles and amphibians in various degrees. This disease is has only proven fatal to largemouth bass but can live in other species of fish without impact.

**Symptoms:** Fish infected with LMBV may display hyper-buoyancy, spiral swimming and lethargy, which are attributed to damage to the swim bladder. Infected fish may not exhibit any signs of the virus until it is activated by stressful environmental conditions such as high water temperatures, low oxygen levels, droughts, secondary injuries, or bacterial infections.

**Transmission:** This disease is spread through prey items and direct contact or exposure to infected water or soil. Wading or boating through an infected area without thoroughly cleaning and drying equipment will carry the disease to an uninfected area. This disease cannot be transmitted to humans but all freshwater fish should be thoroughly cooked before eating.

**Prevention:** To avoid further spread of this disease, all equipment should be bleached and scrubbed in a 3% bleach solution before entering a wetland and between wetlands. This includes boats, paddles, shoes and anything else that comes into contact with the water. Stress to caught and released bass should be kept at a minimum during periods with warmer water temperatures as it increases risk for disease. Never relocate an animal; it is illegal and can transfer disease to new locations.

To learn more about proper disinfecting procedures [click here](#).

***Report fish kills to the Environmental Police: (401) 222-3070***