Pennsylvania Game Commission Wildlife Disease Reference Library

Duck Plague

<u>Other Names</u>: Duck Virus Enteritis

Cause

Duck plague is a highly contagious infectious disease of ducks, geese, and swans caused by a herpes virus. This disease was first described in domestic waterfowl in the Netherlands in 1923. Duck Plague was first reported in the United States in commercial ducks and wild waterfowl on Long Island, New York in 1967.

Significance

Duck plague outbreaks in domestic waterfowl can result in mortality rates as high as 60%, and can cause significant decreases in egg production which can lead to major economic losses. This virus may also cause major die-offs in migratory waterfowl, but there have only been three such outbreaks involving wild waterfowl known to have occurred in the United States.

Species Affected

Duck plague affects ducks, geese, and swans, though some species are more susceptible than others. Some of the more highly susceptible species include the blue-winged teal, redhead duck, and wood duck. The Canada goose, gadwall, mallard, and Muscovy are moderately susceptible, while the pintail is less susceptible. Coots may also be susceptible to duck plague. Non-waterfowl bird species are believed to be resistant to the virus. Duck plague does not infect mammals, nor does it infect humans.

Distribution

Since it was first found in New York in 1967, duck plague outbreaks have been reported throughout the United States and Canada. Outbreaks occur with the greatest frequency in Maryland, California, Virginia, and New York. Domestic and captive waterfowl flocks are affected far more frequently than wild birds. In the United States there have only been two major outbreaks (and one minor outbreak in New York in 1967) of duck plague in migratory waterfowl. The first occurred in 1973 at the Lake Andes National Wildlife Refuge in South Dakota, and the second in the New York Finger Lakes region in 1994.

Duck plague has also been reported in several countries in Europe and Asia.

Transmission

Susceptible birds can become infected with duck plague by coming into contact with a bird that is shedding the virus, or by coming into contact with an environment that is contaminated with feces or oral and nasal secretions from an infected bird. Ingesting food or water contaminated with the virus is a common mode of transmission. Susceptible birds may become infected by way of inhalation of aerosolized secretions containing the virus. The virus can also be passed in eggs from a female to her offspring.

In the United States, the majority of outbreaks occur from March to June when birds are crowded during spring migration and under stress due to seasonal weather changes, migration, and breeding. These stressors make the birds more susceptible to disease, and the overcrowding facilitates disease transmission.

Clinical Signs

Clinical signs can vary depending on the viral strain, and the species affected, age, sex, and immune status of the infected bird. Clinical signs may develop within 3-7 days of exposure to the virus and include depression, ruffled feathers, difficulty breathing, loss of coordination, avoidance of light, extreme thirst, loss of appetite, ocular and nasal discharge (may be bloody), bloody watery diarrhea, and a bloody vent. Females may have a decrease in egg production, while males may have a prolapsed penis. Birds die quickly of duck plague, so they are often found dead without being observed showing clinical signs.

Some birds will survive and become asymptomatic carriers of the virus and can act as sources for future outbreaks. These birds often have a "cold sore" like ulcer under the tongue from which the virus is shed.

At necropsy birds that died of duck plague will often have hemorrhagic or necrotic bands in the intestines and the digestive tract is often filled with blood. There may also be cheese-like plaques within the esophagus and cloaca.

"Cold sore" like ulcer under the tongue; photo courtesy of USGS by James Runningen

Diagnosis

Duck plague is diagnosed in the laboratory by isolating and identifying the virus.

Treatment

As with most viral diseases, there is no treatment for duck plague.

Management/Prevention

Prompt carcass disposal and environmental decontamination is key in control of duck plague outbreaks in wild flocks. When outbreaks occur in domestic flocks, the entire flock is often destroyed because surviving birds can carry the virus and initiate future outbreaks. The premises must also be thoroughly decontaminated and the carcasses burned. Vaccines against duck plague are used in the commercial duck industry, but the vaccines may not be effective in preventing illness in wild waterfowl. Domestic birds should be prevented from coming into contact with wild birds. The United States Fish and Wildlife Service has set up a national monitoring system for duck plague, so that outbreaks in wild and domestic flocks will be recognized and responded to quickly.

Suggested Reading

Friend, M. Duck Plague. Pages 141-152 *in* M. Friend, and J. C. Franson, technical editors. Field Manual of Wildlife Diseases: Birds. United States Geological Survey.

Hansen, W. R., and R. E. Gough. 2007. Duck Plague (Duck Virus Enteritis). Pages 87-107 *in* N. J. Thomas, D. B. Hunter, and C. T. Atkinson, editors. Infectious disease of wild birds. Blackwell Publishing, Ames, Iowa, USA.

Michigan Department of Natural Resources. Wildlife Disease. Duck Virus Enteritis. < http://www.michigan.gov/dnr/1,1607,7-153-10370_12150_12220-26644--,00.html>.

National Wildlife Health Center. 2011. Duck Plague (Duck Virus Enteritis). United States Geological Survery. <http://www.nwhc.usgs.gov/disease_information/other_diseases/duck_plague.jsp/>.