



**Pennsylvania Game Commission Wildlife Disease Reference Library**

## **Avian Cholera**

**Other Names: Fowl cholera, avian pasteurellosis, avian hemorrhagic septicemia, chicken cholera**

### **Cause**

Avian cholera is an infectious disease of domestic and wild birds caused by the bacteria *Pasteurella multocida*. This disease has been recognized for over 200 years. There are many strains of *P. multocida* that infect different species of birds and mammals and cause varying degrees of disease; however, this description will focus primarily on avian species.

### **Significance**

Avian cholera is the most significant infectious disease of wild waterfowl in North America. Single outbreaks can kill thousands of birds, and outbreaks occur almost annually in some parts of the continent.

### **Species Affected**

*P. multocida* has been found in many species of birds and mammals. Avian cholera infections have been reported in over 190 species of birds. Most bird species are probably susceptible to this disease. Waterfowl and coots are the most commonly affected and they frequently experience major mortality events. Scavengers such as gulls, raptors, and crows are also affected with relative frequency, while other water birds and upland species are less commonly affected. Domestic poultry and other captive species are also susceptible to avian cholera.



The various strains of *P. multocida* are more infectious in some species

Photo courtesy of USGS.gov

than others. For example the *avian* strains are known to cause fatal disease in birds, rabbits, and mice, but not in other mammals. Some mammalian strains cause illness in birds, while others do not. Some predatory mammals such as raccoons and cats have *P. multocida* in their mouths that can infect prey via a bite wound, but does not cause disease in the predator. Avian strains of *P. multocida* typically do not infect humans, though mammalian strains can infect humans via animal bites, scratches, or wound contamination.

### **Distribution**

Avian cholera was first reported in wild waterfowl in North America in the winter of 1943-1944 in Texas and California. These outbreaks marked the beginning of the emergence of this disease in North American waterfowl, and by the early 1980's outbreaks had also occurred in Nebraska, Maryland, and the Northwest Territories, Canada. North America now experiences epidemics of avian cholera in wild waterfowl almost annually. The regions in the United States that experience mortalities from avian cholera most frequently include the California Central Valley, the Tule Lake and Klamath Basins in northern California and southern Oregon, the Playa Lakes and Gulf Coast regions in Texas, the Rainwater Basin in Nebraska, and the Lower Missouri River Basin in Iowa and Missouri. Less frequent mortality events also occur in the Chesapeake Bay area in Maryland. In 2008, thousands of birds died of avian cholera on the Great Salt Lake in Utah. Outbreaks are much less frequent in other parts of the world even though the disease probably occurs worldwide in domestic birds. To date no outbreaks of this disease have been documented in Pennsylvania.

### **Transmission**

*P. multocida* is released into the environment by dead and dying birds as well as asymptomatic carriers, and it can be transmitted to susceptible birds in a variety of ways. It can be transmitted during direct bird-to-bird contact, especially when birds are crowded together. The bacteria tend to collect on the surface of water and can become airborne when birds take flight and also when they land. Once in the air, the bacteria can be inhaled. Avian cholera can also be transmitted by way of ingestion of contaminated food or water. Ingestion is likely the most common route of transmission. Predatory and scavenging birds may acquire avian cholera by feeding on infected birds and small mammals. The bacteria may also be transmitted via the bites of insects and predatory mammals, but this is more likely a source of sporadic cases, not outbreaks. *P. multocida* can also be introduced to new areas by humans by way of contaminated equipment, cages, and clothing.

Avian cholera is transmitted easily between birds when they flock together in high densities. Birds are more susceptible to disease at times of stress, and avian cholera outbreaks often occur during the winter when birds are overcrowded and the weather is cold and damp. Other stressors influencing disease outbreaks include migration, harsh environmental conditions, and competition for limited food resources.

### **Clinical Signs**

During outbreaks of avian cholera large numbers of birds are found dead, and very few sick birds are observed, indeed most wild birds infected with avian cholera are not observed when they are showing clinical signs. When sick birds are observed they

exhibit lethargy, convulsions, and difficulty breathing. Birds may also swim in circles and fly erratically. They may have nasal discharge, matted and soiled feathers, and bloody feces. This disease kills birds so suddenly that they may fall out of the sky or die while eating.

Because avian cholera kills so quickly, most dead birds are in good body condition. At necropsy, hemorrhages often can be observed on the heart muscle and gizzard, and small white-yellow spots may be found on the liver.

It was once believed that almost all birds infected with avian cholera die suddenly of the disease. However, more recent research shows that some birds survive and become carriers of the bacteria. These birds are a likely source of infection for subsequent outbreaks.

### **Diagnosis**

*P. multocida* must be isolated to reach a definitive diagnosis of avian cholera. Avian cholera shares clinical signs with several other diseases of wild birds, so it is important to conduct laboratory tests to confirm the cause of illness.

### **Treatment**

Antibiotics may be used to effectively treat individual cases of avian cholera, but it is not feasible to treat wild birds when outbreaks occur.

### **Management/Prevention**

Management efforts for avian cholera in wild birds focus on limiting transmission during outbreaks. Wetland areas where migratory birds congregate must be surveyed frequently to ensure early detection of disease outbreaks. When outbreaks are detected, carcasses must be collected and disposed of rapidly in order to minimize environmental contamination. Management practices may also be implemented to decrease population densities because the disease is most readily transmitted when during times of overcrowding.

### **Suggested Reading**

Friend, M. Avian Cholera. Pages 75-92 in M. Friend, and J. C. Franson, technical editors. Field Manual of Wildlife Diseases: Birds. United States Geological Survey.

Michigan Department of Natural Resources. Wildlife Disease. Fowl Cholera. <[http://www.michigan.gov/dnr/1,1607,7-153-10370\\_12150\\_12220-26650--,00.html](http://www.michigan.gov/dnr/1,1607,7-153-10370_12150_12220-26650--,00.html)>.

National Wildlife Health Center. 2011. Avian Cholera. United States Geological Survey. <[http://www.nwhc.usgs.gov/disease\\_information/avian\\_cholera/](http://www.nwhc.usgs.gov/disease_information/avian_cholera/)>.

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Samuel, M. D., R. G. Botzler, and G. A. Wobeser. 2007. Avian Cholera. Pages 239-269 in N. J. Thomas, D. B. Hunter, and C. T. Atkinson, editors. Infectious disease of wild birds. Blackwell Publishing, Ames, Iowa, USA.



