Pennsylvania Game Commission Wildlife Disease Reference Library

Avian Pox

<u>Other Names</u>: Bird pox, fowl pox, avian diphtheria

Cause

Avian pox is a infectious disease of birds caused by a poxvirus. There are many different species and strains of avian poxvirus that preferentially infect different species of birds. This is one of the oldest known avian diseases.

Significance

While avian pox infections in wild birds are often mild and self-limiting, some outbreaks cause high mortality rates. Birds native to isolated islands are particularly susceptible to this disease. In Hawaii, avian pox has negatively impacted many species of native birds. Avian pox can lead to significant losses when many captive birds are housed in close quarters. The virus can also spread between wild and captive birds (see **Transmission**).

Species Affected

Most bird species are believed to be susceptible to avian pox. About 60 species of wild birds have been reported with this disease; turkeys and doves are the most commonly affected wild bird species in Pennsylvania. Upland gamebirds (such as mourning doves and wild wurkeys), songbirds, and raptors can experience varying degrees of mortality due to avian pox. Wild waterfowl in North America have recently experienced an apparent increase in infection rate, though infections in these birds are still relatively uncommon. Domestic birds can also become infected with this disease, but wild birds are not thought to be a major source of infection for domestic birds. Avian poxviruses are not known to infect humans.

Distribution

Avian pox is distributed worldwide except Antarctica, the Arctic, and some other remote regions. Infection rates appear to be greater in areas with temperate and warmer climates. The virus has been introduced to several remote islands such as Hawaii, the Galapagos, and the Canary Islands where it spreads rapidly among the native bird populations. Poxvirus outbreaks are common in aviaries, rehabilitation centers, and

whenever captive birds are housed closely together. This disease occurs sporadically in Pennsylvania turkeys and doves, as well as less frequently in domestic turkeys,

Transmission

Avian pox is most commonly transmitted by biting insects such as mosquitoes, mites, midges, and flies. These insects pick up virus particles when they bite an infected bird then transmit the virus when they bite a susceptible bird. Transmission rates are highest when biting insects are abundant. The virus can also be acquired via direct contact with infected birds or contact with contaminated objects such as bird feeders. Avian poxvirus can withstand drying and can remain infective on contaminated surfaces and in dust. Birds can become infected by ingesting contaminated food or water. The virus can also enter the body through skin abrasions. The virus particles can become aerosolized and infect susceptible birds via inhalation, though this is probably rare. Transmission rates are also influenced by bird population density, and higher infection rates occur when bird densities are greatest.

Wild turkey with avian pox; photo courtesy of PSU Animal Diagnostic Lab

Clinical Signs

Avian pox develops slowly in affected birds. The most common clinical sign of avian pox is the formation of wart-like growths on the skin, particularly on unfeathered parts of the body such as the legs, feet, eyelids, base of the beak, and the comb and wattles. This is the cutaneous or "dry" form of avian pox. Birds with mild infections may only have a few growths that minimally affect their health status. In most cases, the bird will survive and the nodules will heal with some scarring. At times, nodules on the eyes can interfere with the bird's ability to see food or predators and can lead to death. In more severe cases, birds may develop necrotic, yellow-white, cheese-like lesions in their mouths and upper respiratory tract (this is known as the diphtheritic or "wet" form of the disease) which can lead to decreased food intake, difficulty breathing, and death.

Diagnosis

Other diseases can have clinical signs similar to avian pox, so laboratory tests must be conducted to confirm the diagnosis. It is a common mistake to confuse avian pox with blackhead, a protozoal disease that causes the intestines to become inflamed and ulcerated. The name blackhead can be misleading, as this disease rarely results in discoloration of the head. A more specific sign of blackhead is the presence of yellow rings on the liver.

Treatment

Captive birds may be treated by sterilizing the lesions and bathing the affected areas. Broad spectrum antibiotics may be given to prevent secondary bacterial infections. These methods will not eliminate the virus, and the disease will run its course with or without treatment. No treatment is available for free-ranging species.

Management/Prevention

The main goal of avian pox control efforts is to prevent further disease transmission. Mosquito control and elimination of breeding sites is an important aspect of poxvirus transmission prevention. Severely infected birds should also be removed. Avian pox is often transmitted when birds congregate at bird feeders. When outbreaks occur, bird feeders, baths, and cages should be decontaminated with a 10% bleach and water solution (9 parts water:1 part bleach). The domestic poultry industry vaccinates against avian pox, but the safety and effectiveness of such vaccines in wild birds is currently unknown.

Suggested Reading

Hansen, W. Avian Pox. Pages 163-170 *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. Avian Pox. < http://www.michigan.gov/dnr/0,1607,7-153-10370_12150_12220-26362--,00.html>.

National Wildlife Health Center. 2011. Avian Pox. United States Geological Survery. <http://www.nwhc.usgs.gov/disease_information/other_diseases/avian_pox.jsp>.

van Riper, C., and D. J. Forrester. 2007. Avian Pox. Pages 131-176 *in* N. J. Thomas, D. B. Hunter, and C. T. Atkinson, editors. Infectious disease of wild birds. Blackwell Publishing, Ames, Iowa, USA.