

BASICS

Aspergillosis is a disease caused by various species of fungi in the genus *Aspergillus*. These fungi grow in warm, moist decomposing organic matter, such as soil, grain, straw, and silage. Aspergillosis can affect mammals and birds, but birds are especially susceptible.

Aspergillus fumigatus is the most frequent species affecting wild birds. Waterfowl, raptors, and gulls are most often reported.

Aspergillosis is primarily a respiratory disease. Birds become infected by **INHALATION** of fungal spores.

Outbreaks of acute aspergillosis occur in flocks of waterfowl congregating on **AGRICULTURAL FIELDS** covered with moldy waste grain in fall or early winter. When overwhelming numbers of spores are inhaled, birds may die rapidly from severe respiratory distress. Birds found dead may appear healthy and in good body condition.

Chronic aspergillosis occurs sporadically and results when birds are exposed to lower numbers of spores over a longer time period. Birds become debilitated and emaciated as they experience **PROGRESSIVE RESPIRATORY COMPROMISE**.

DIAGNOSIS of aspergillosis is made by a compatible history of exposure and observation of fungal plaques in the respiratory tract or other organs. Histopathology and culture and isolation can be used to confirm the fungus in tissue sections.

TREATMENT of aspergillosis in birds is limited because of the lack of antifungal drugs available for birds and because of the rapid onset of disease in acute exposures.

PREVENTION of aspergillosis in wild birds involves reducing access to moldy agricultural waste by plowing under or covering crop waste or deterring birds from feeding on waste grain with noise.

Aspergillosis is **NOT TRANSMITTED** bird to bird or from bird to humans. However, humans may become infected by inhaling spores when working with contaminated materials or infected birds.



**HUMAN
PATHOGEN**

INHALATION

**BIRDS AND
MAMMALS**

DETAILS

HISTORY Aspergillosis, a disease caused by the fungus *Aspergillus*, has been known to affect wild birds since the early 1800s when it was reported in a greater scaup. *Aspergillus fumigatus* is the most common cause of aspergillosis in wild birds, but it can also be caused by *A. flavus* and *A. niger*. *Aspergillus flavus* can also produce aflatoxins in grains that cause illness or death in some wildlife species when ingested.

Aspergillosis can affect mammals and birds, but birds are especially susceptible. All species of birds are susceptible to infection with *Aspergillus sp.* In New York State, the disease is most often seen in gulls, common loons, and raptors. Domestic and captive wild birds are also at risk of infection.

Although the disease has been reported in wild mammals, it does not typically cause outbreaks and is not a major concern. In deer, nodules in the lungs can be mistaken for bovine tuberculosis.

TRANSMISSION of aspergillosis occurs via inhalation of fungal spores, the main reproductive units of fungi. The spores lodge in the lungs or air sacs of birds where they germinate and grow fungal hyphae to form plaques or nodules in the respiratory tract. Thickened walls of the lungs and air sacs result in decreased respiratory function and pneumonia. Although aspergillosis is primarily a **RESPIRATORY DISEASE**, all systems can be affected if the fungus spreads to other organs by direct extension through the air sac walls, via the bloodstream, or through hollow bones connected to air sacs.

Captive birds may become infected by inhaling spores present in moldy bedding or feed.

CLINICAL SIGNS in infected birds are related to respiratory compromise and may include increased respiratory rate and effort, gasping, anorexia, diarrhea, and weakness. Birds may die acutely without showing obvious signs of disease, or they may become debilitated and emaciated in chronic infections. Birds may also show neurological signs, such as incoordination and neck twisting, if the fungus has invaded the nervous system.

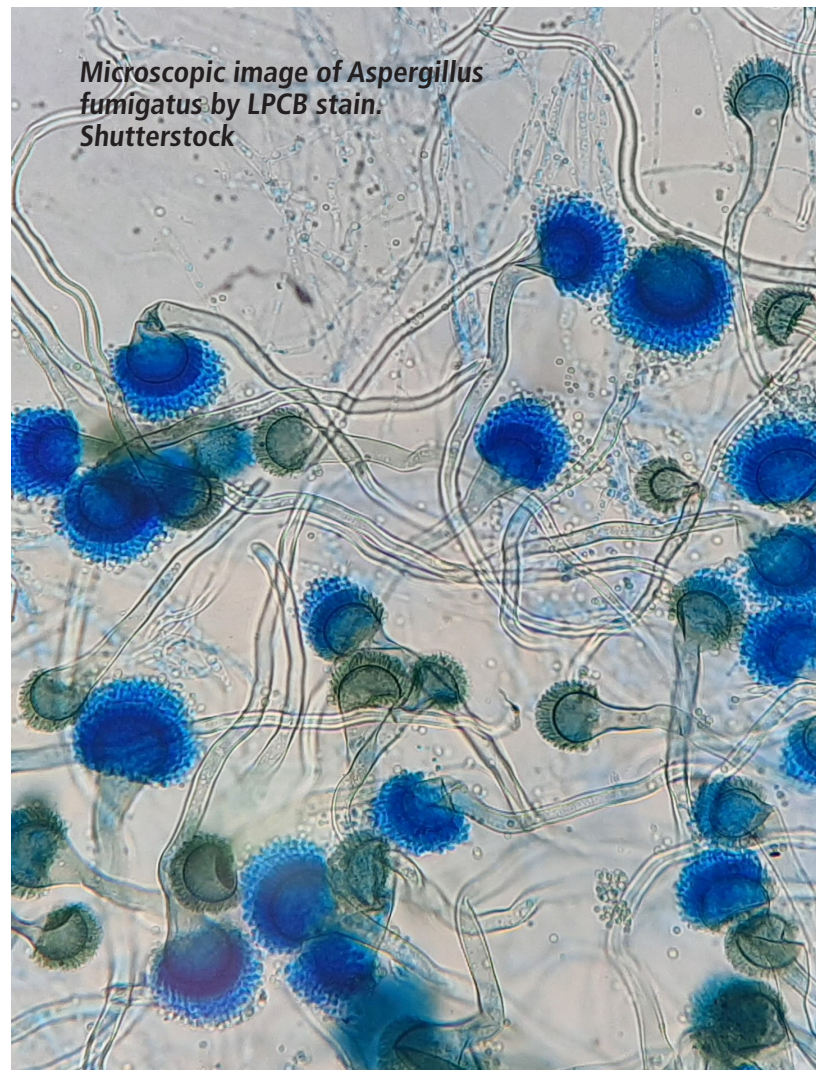
In **DOMESTIC POULTRY** hatcheries or game farms, acute aspergillosis is known as brooder pneumonia. The disease

is seen in young birds that inhale large numbers of spores after hatching or when housed on contaminated bedding.

Stressed and immunocompromised birds are greater risk of aspergillosis. Aspergillosis is a serious risk in rehabilitation centers dealing with wild seabirds after oil spills. Lead toxicosis, which causes immunosuppression, may be seen concurrently in birds with aspergillosis.

Because **TREATMENT** of aspergillosis is difficult, preventing access to moldy feed is important. For captive birds, reduction of stress and exposure to potentially contaminated bedding and feed material are important prevention measures.

People at risk should take **PRECAUTIONS** such as wearing respiratory protection when working in potentially contaminated areas or with bird carcasses suspected of being infected. Although people cannot become infected by eating infected meat, they should discard infected carcasses to avoid inhaling spores present in the air sacs.



Microscopic image of *Aspergillus fumigatus* by LPCB stain.
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