



Section 3

## Fungal Diseases

Aspergillosis

Candidiasis

Miscellaneous Fungal Diseases

*Moldy grain may be the source of aspergillosis in wild waterfowl*  
Photo from National Wildlife Health Center

# Introduction to Fungal Diseases

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“Fungi are of an ancient lineage and have a fossil record that extends back to the Devonian and Pre-Cambrian eras...the earliest written record of fungi are not of the fungi themselves, but of their depredations... To the physician and poet Nicander [ca. 185 B.C.], fungi were ‘the evil ferment of the earth; poisonous kinds originating from the breath of vipers,’...”

(Ainsworth)

Fungi are important causes of disease in wild birds and other species. Three basic types of disease are caused by these agents: mycosis, or the direct invasion of tissues by fungal cells, such as aspergillosis; allergic disease involving the development of a hypersensitivity of the host to fungal antigens; and mycotoxicosis, which results from ingestion of toxic fungal metabolites. Mycosis and allergic disease may occur together, especially when the lung is infected. This section will address only mycosis. Mycotoxicosis is addressed in Section 6, Biotoxins. Allergic disease is not well studied in wild birds and it is beyond the scope of this Manual.

Most disease-causing fungi are commonly found within the normal environment of hosts that may become diseased. Host resistance is the main determinant of whether or not disease will occur. Opportunistic infections often result when

birds and other species are immunosuppressed, when their mechanisms for inflammatory response are inhibited, or when they experience physical, nutritional, or other stress for prolonged periods of time. Newborn do not have fully functioning immune systems and are, therefore, especially vulnerable to mycosis as are very old animals that are likely to have impaired immune systems. Inhalation is the primary route for exposure to most fungi-causing mycosis.

Aspergillosis is the primary mycosis affecting wild birds. Candidiasis is a less common mycosis of wild birds and other species, but it differs greatly from aspergillosis by being transmitted by ingestion. These two diseases are the primary mycoses of wild birds and are the main subjects of this section.

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Quote from:

Ainsworth, G.C., and Sussman, A.S., 1965, *The fungi: An advanced treatise*, v. 1 of *The Fungal Cell*: Academic Press, New York, p. 4, 8.