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## VETERINARY UPDATE:

# Proventricular Dilation Disease

by Peter Helmer, DVM  
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Every aviculturist should be aware of the syndrome known as Proventricular Dilation Disease (PDD), Psittacine Wasting Disease, Macaw Wasting Syndrome, Neuropathic Gastric Dilation, or Blue and Gold Wasting Disease. This fatal disease was first reported in Blue and Gold Macaws in the late 1970s. Multiple causative agents, or etiologies, have been proposed. Most recently, a virus has been implicated; however, the identity of the virus has not been clearly established. The disease has been reported in more than 50 species of the order Psittaciformes, as well as suggestive findings in toucans, honey-creepers, canaries, weaver finches, Canada Geese, and Roseate Spoonbills. Research is ongoing at many institutions, including the Psittacine Disease Research Group, College of Veterinary Medicine, University of Georgia.

The syndrome is characterized by inflammation of the nerves of the gastrointestinal tract. Two white blood cell types, plasma cells and lymphocytes, accumulate in the nervous system, especially the nerves that supply the muscles of the proventriculus, crop, ventriculus, and small intestine. The inflammation of these nerves inhibits normal muscle activity of the gastrointestinal tract. Clinical signs associated with this infiltration include depression, weight loss, constant or intermittent regurgitation, passage of undigested seeds in the feces, seizures, and abnormal head movements.

Diagnosis can be difficult. Blood work is usually within normal parameters. Radiographs (X-rays), often using a contrast agent such as barium, may demonstrate an enlarged, or dilated, proventriculus. This dilation is normal in pre-weaning neonates, but suggests several syndromes, including PDD in adults. A second diagnostic test that may be used is a biopsy of the crop. A small piece of crop tissue is removed surgically to examine microscopically.

The disease process, if present, may be identified in the nerves of the crop wall. This test is not perfect, and although a positive biopsy diagnoses PDD, a negative biopsy does not rule it out.

Other diseases can mimic PDD. In particular, heavy metal (lead or zinc) toxicity and paramyxovirus-3 infection resemble the disease. Microscopic analysis and blood tests are often the only way to differentiate these conditions.

Proventricular dilation disease can occur in any aviary despite excellent quarantine, hygiene, and husbandry conditions. Some aviaries will experience an outbreak of several cases at the same time, while others will have sporadic cases over a number of years. In some instances, a single bird in a breeding pair will die, and the mate remains unaffected years later. Many birds exposed directly or indirectly to an affected bird remain asymptomatic.

Birds in direct contact with those affected (mates, siblings, offspring) should be considered at higher risk of developing the disease and they should be isolated. These exposed birds should not be euthanized as many birds directly exposed to PDD never develop symptoms. Birds that do show signs of disease are provided with highly digestible food in low-stress environments and can survive for months to years. Of course, any bird with the disease must be placed in strict isolation. In the aviary setting, every attempt should be made to diagnose the condition as early detection is beneficial to the flock. Although the causative agent remains unidentified, good quarantine and routine disinfectants are recommended.

### References

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