

AVM Studies Continue at SCWDS

SCWDS Briefs, October 2002, Vol.18, No.3

Research conducted in 2001 by SCWDS in cooperation with the Georgia Department of Natural Resources, the U.S. Army Corps of Engineers, and Auburn University confirmed the widely held theory that raptors can acquire avian vacuolar myelinopathy (AVM) via ingestion of other affected birds. This was demonstrated experimentally when brain lesions developed in unreleasable, rehabilitated red-tailed hawks that were fed tissues from coots with AVM (SCWDS BRIEFS, Vol. 17, No. 2).

Avian vacuolar myelinopathy was first recognized in 1994 when it killed 29 bald eagles in Arkansas. Since then, AVM has been confirmed or suspected in the deaths of at least 90 bald eagles in Arkansas, Georgia, North Carolina, and South Carolina. AVM also is responsible for hundreds of American coot deaths and has been detected in other avian species, including mallards, Canada geese, great horned owls, and a killdeer. The cause of AVM remains undetermined despite extensive diagnostic and research investigations by several state and federal wildlife resource agencies and universities. However, a natural or manmade neurotoxicant is suspected because there has been no evidence of viruses, bacteria, prions, or other infectious agents, and the lesions are consistent with toxicosis. To date, AVM has not been confirmed in mammals, and it remains unknown whether the cause of AVM could affect humans.

In 2002, SCWDS researchers conducted experimental feeding trials to determine if pigs develop vacuolar lesions in central nervous system myelin after ingesting tissues from affected coots. Pigs were chosen because of their availability, ease of feeding, and frequent use as animal models for a variety of human diseases. The research protocol was very similar to the previous year's feeding trial that involved red-tailed hawks. Young pigs ingested tissues from coots in which AVM had been confirmed microscopically. The pigs did not develop signs of central nervous system disease during the month-long trial. At the termination of the study, microscopic examination of brain, spinal cord, and peripheral nerves revealed no vacuolar or other lesions in the pigs. However, lesions consistent with AVM developed in an unreleasable, rehabilitated red-tailed hawk that served as a positive control animal.

Results of this trial indicate that young pigs do not develop central nervous system lesions within 1 month of consuming affected coot tissues under our experimental conditions; however, additional studies are warranted to further evaluate potential mammalian susceptibility to the AVM agent. As the AVM morbidity and mortality season approaches, SCWDS and other wildlife health and resource organizations are preparing to continue field and laboratory investigations in order to determine the cause of AVM, its source, and the range of susceptible species.