

# An “Ill-eagle” Partnership

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**Room 511B**

**Session 771**

**Tuesday, 18 Nov 03**

**3:00 – 4:30 p.m.**



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# An “Ill-eagle” Partnership

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The Joint Venture to find the  
cause of  
Avian Vacuolar Myelinopathy  
(AVM)



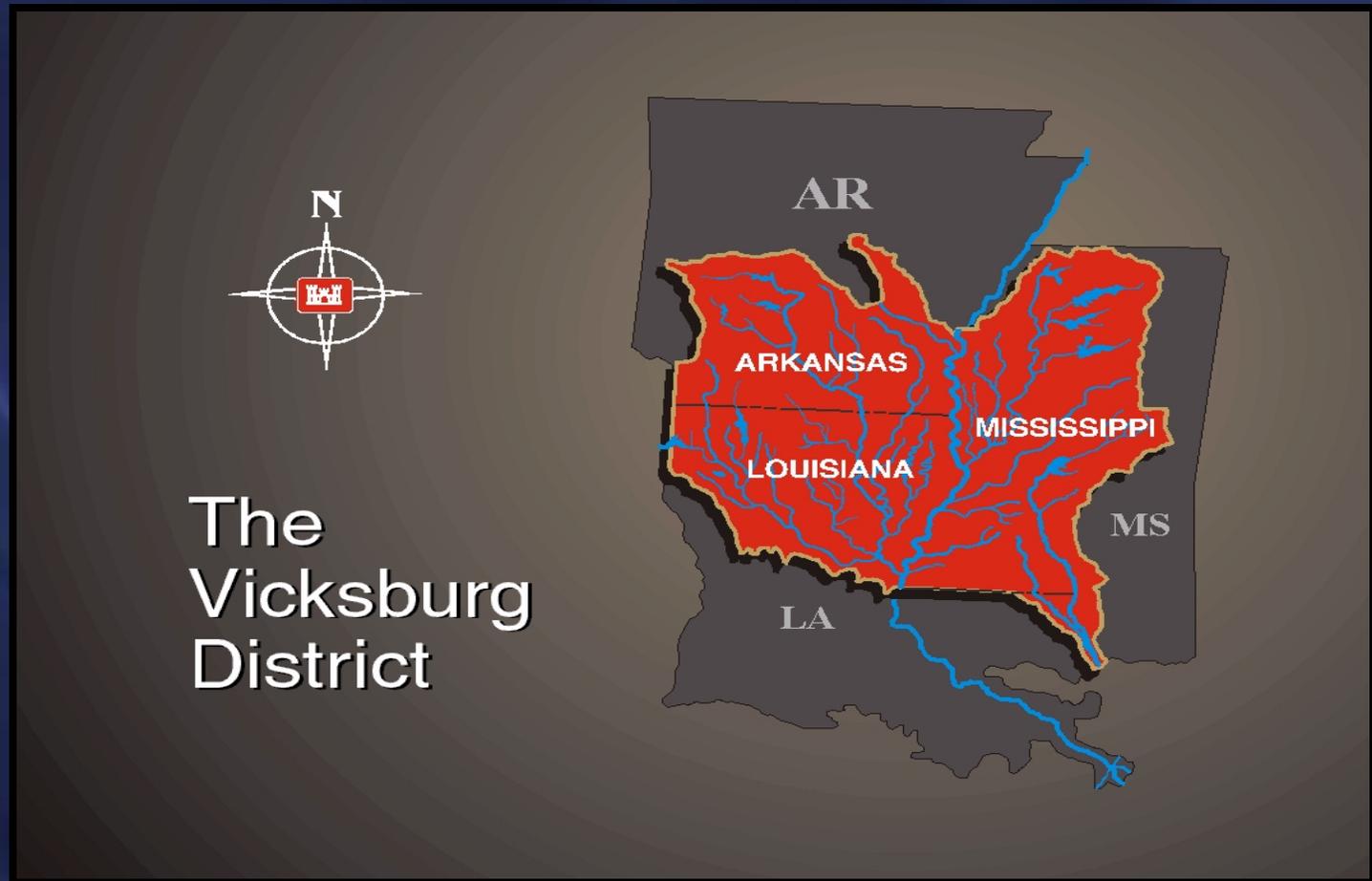
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# AVM Investigation



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# District Boundary

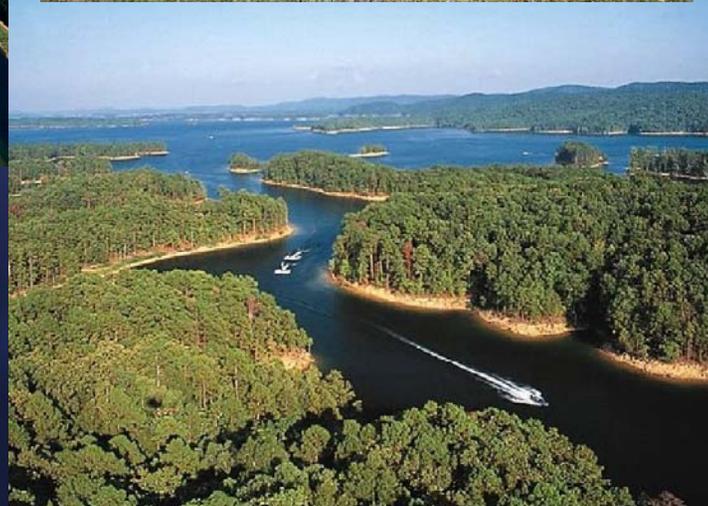
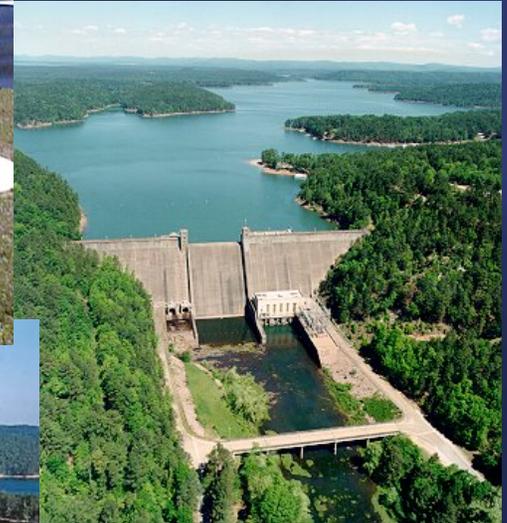
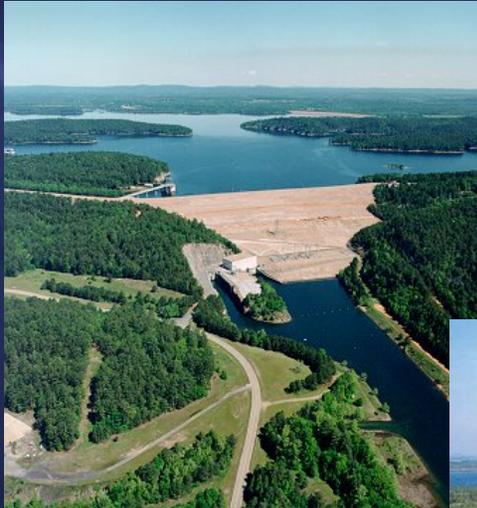


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# Ouachita Project Office



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# Bald Eagle Habitat



## Annual Midwinter Counts

DeGray Lake – 25- 40 wintering eagles

Lake Ouachita – 60-120 wintering eagles



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# Bald Eagle Habitat



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# November 24, 1994



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# More Eagles Found



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# Shoreline/Water Search

**U.S. Army Corps of Engineers  
Arkansas Game and Fish Commission  
U.S. Fish and Wildlife Service  
Ross Foundation**



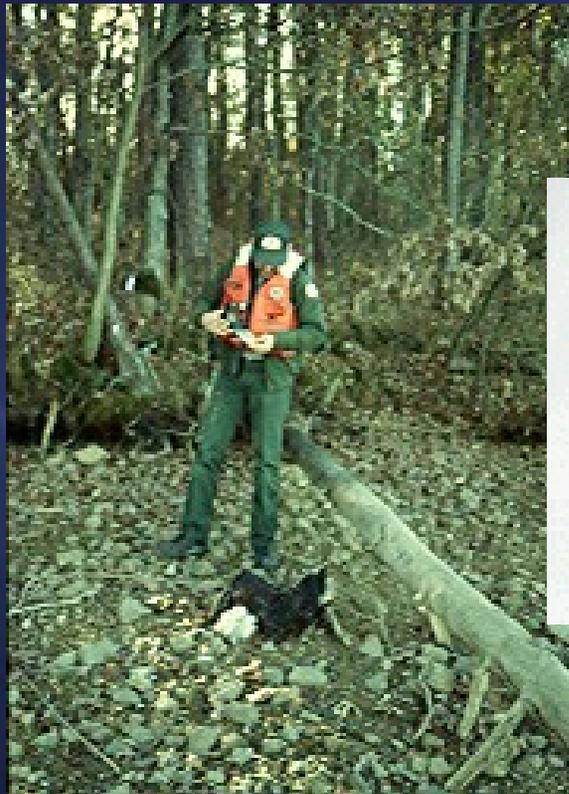
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# Shoreline/Water Search



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# Shoreline/Water Search



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# More Eagles Found

- Additional eagles found on 29 November (live), 7,8,9,10,11 December and continuing until last eagle found on 24 February 1995.
- 30 December 1994 – Arkansas Game and Fish Commission holds press conference
- 13 January 1995 – Arkansas Game and Fish Commission holds another press conference with Federal officials



# American Coots

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# American Coots



**15 Coots dead in a cove at DeGray Lake**



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# AVM Clinical Signs

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# American Coots

Inability to take flight



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# AVM signs



- Reluctance or Inability to Fly
- Posterior Bobbing
- Swimming Upside Down



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# American Coots

- Stumbling, Wobbling
- Paralysis on One Side
- Flying into Objects



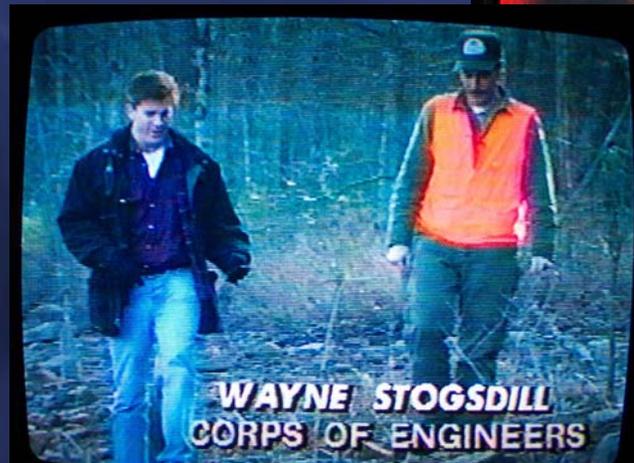
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# Media Attention



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# Media Attention



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# “Under the Gun”



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# Chicken Farm Dumps?



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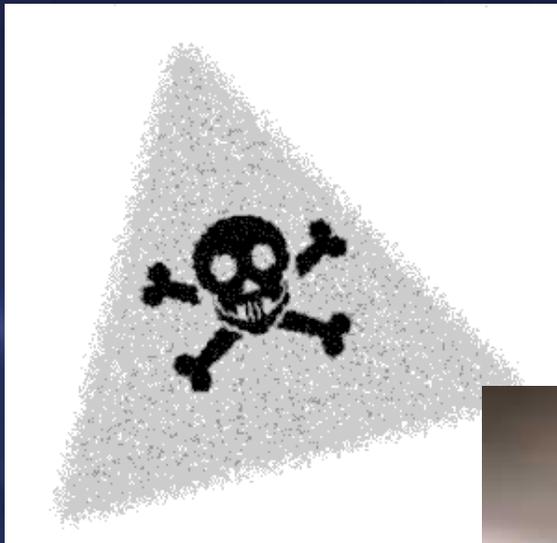
# Herbicide Runoff?

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# Manmade Toxins?



Paint and Lacquer  
Manufacturing  
Company Nearby



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**CEBLS → AVM**



**Coot and Eagle  
Brain Lesion  
Syndrome**



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# American Coots

Date report given \_\_\_\_\_ Time report given \_\_\_\_\_

Report completed by (name & agency or boat dock) \_\_\_\_\_

## LAKE OUACHITA SICK/DEAD FISH AND WILDLIFE REPORT

THIS IS A REPORT OF (PLEASE CHECK ONE)  SICK  DEAD FISH OR WILDLIFE

Observer's Name \_\_\_\_\_

Observer's Daytime(Work)Phone \_\_\_\_\_

Observer's Evening(Home)Phone \_\_\_\_\_

Is observer willing to come back to lake and show AGFC, COE personnel exact location? \_\_\_\_\_

### DESCRIPTION OF SICK/DEAD FISH OR WILDLIFE:

Species or kind of fish or wildlife observed (such as eagle, hawk, fish, coots, ducks, beaver, raccoon, etc.) \_\_\_\_\_

Color of sick/dead wildlife \_\_\_\_\_

If different from body, give color of head \_\_\_\_\_ color of tail \_\_\_\_\_

Size of wildlife observed (length in inches, or size when compared to common object) \_\_\_\_\_

Estimated number of sick/dead fish or wildlife observed \_\_\_\_\_

Date of observation \_\_\_\_\_ Time of day observed \_\_\_\_\_

### LOCATION OF SICK/DEAD WILDLIFE (IF POSSIBLE, MARK THE LOCATION ON A LAKE MAP)

Number of nearest mainland marker ( if known ) \_\_\_\_\_

Distance from marker \_\_\_\_\_

Direction from marker \_\_\_\_\_

Name of nearest boat ramp ( if known ) \_\_\_\_\_

Distance from ramp \_\_\_\_\_

Direction from ramp \_\_\_\_\_

Name of nearest campsite or cove ( if known ) \_\_\_\_\_

Distance from campsite or cove \_\_\_\_\_

Direction from campsite or cove \_\_\_\_\_

Is the sick/dead fish or wildlife in the water or on land? \_\_\_\_\_

Distance of sick/dead fish or wildlife from waters edge \_\_\_\_\_

Other information which will aid in locating observed fish or wildlife \_\_\_\_\_  
(use reverse side for any additional information)



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# Coot Trapping/Banding



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# Coot Trapping/Banding



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# Coot Collecting



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# Necropsy



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# Eagle Capturing

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# Eagle Capturing

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# Eagle Capturing



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# Eagle Capturing



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# Eagle Necropsy



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# Eagle Clinical Signs

- **Inability to fly or short erratic flight**
- **Maintain aggressive behavior at early onset of symptoms**
- **Maintain good body conditions except for brain lesions**
- **Dead specimens usually found near roost sites**
- **Talons clenched in death**

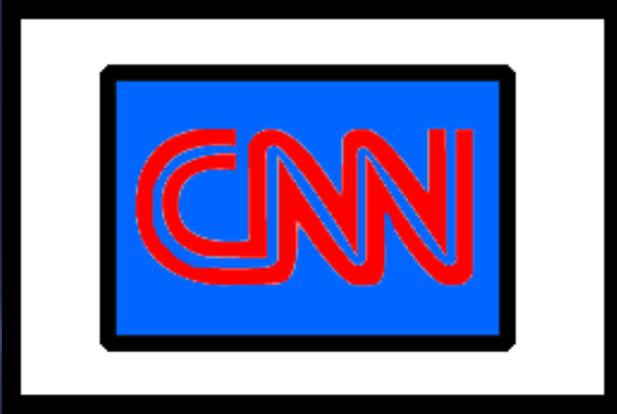


# Eagle Banding and Transmitters



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# Media Attention



**“A mysterious disease is killing birds in the southeastern United States and scientists can’t find the cause.”**

**(CNN Web Site)**



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# Arkansas Eagle Mortality Task Force

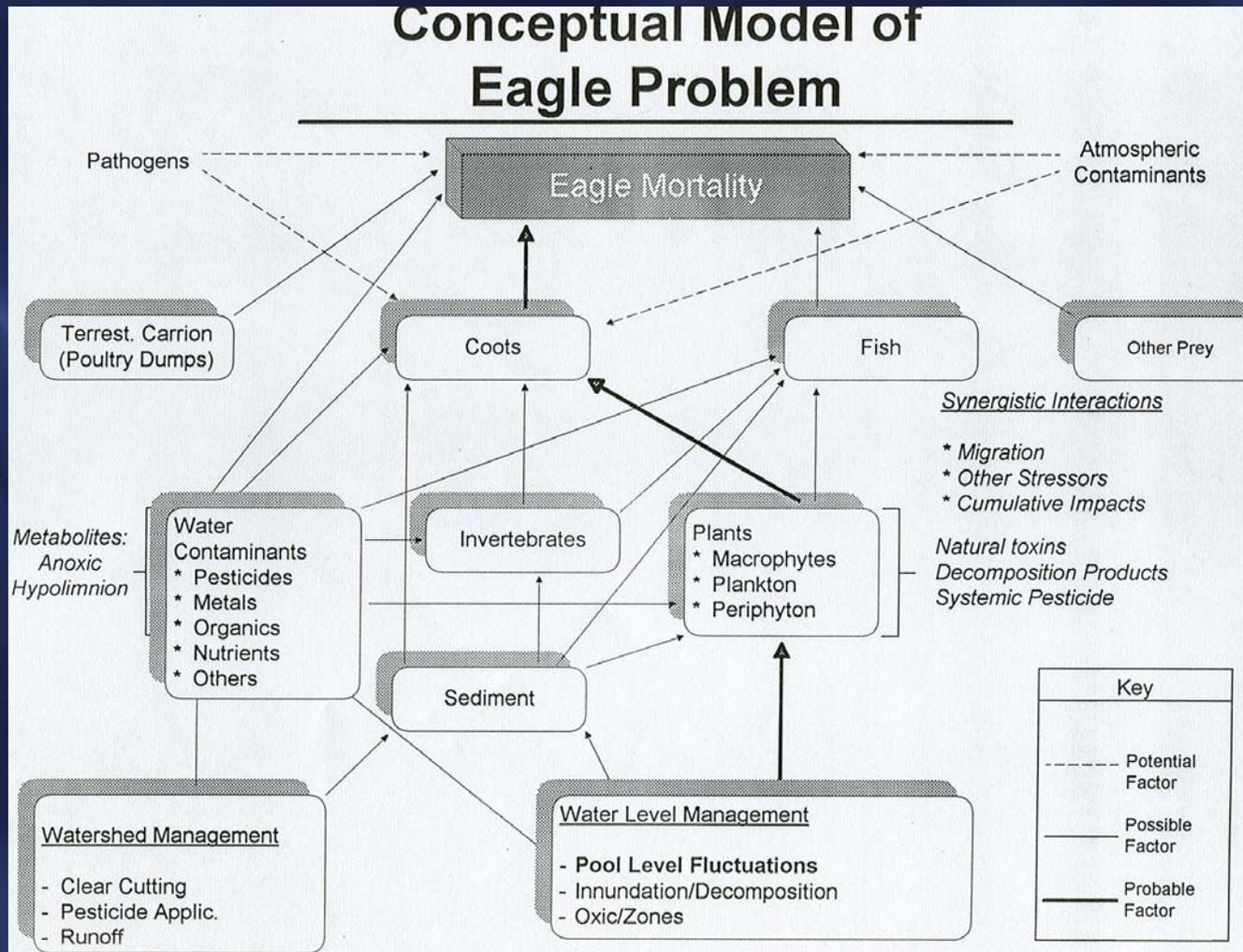
- USGS National Wildlife Health Center
- Ross Foundation
- Southeastern Disease Study Group
- Arkansas Game and Fish Commission
- Arkansas Children's Hospital
- Florida Game and Freshwater Fish Commission
- University of Arkansas at Fayetteville
- Arkansas Natural Heritage Commission
- Savannah River Ecology Lab, Department of Energy
- US Army Corps of Engineers



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# Arkansas Eagle Mortality Task Force

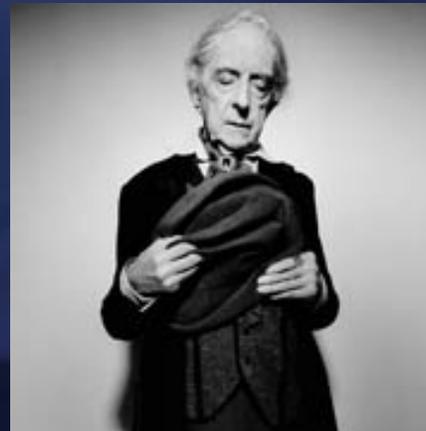
## Conceptual Model of Eagle Problem



# Partnering

**“It is explained that all relationships require a little give and take. This is untrue. Any partnership demands that we give and give and give, and at the last, as we flop into our graves exhausted, we are told that we didn’t give enough.”**

**- Quentin Crisp, British author**

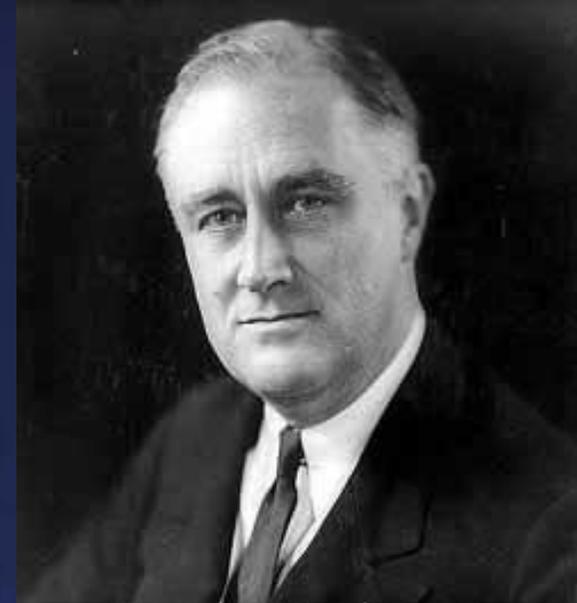


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# Partnering

**“Competition has been shown to be useful up to a certain point and no further, but cooperation, which is the thing we must strive for today, begins where competition leaves off.”**

**- Franklin Delano Roosevelt**



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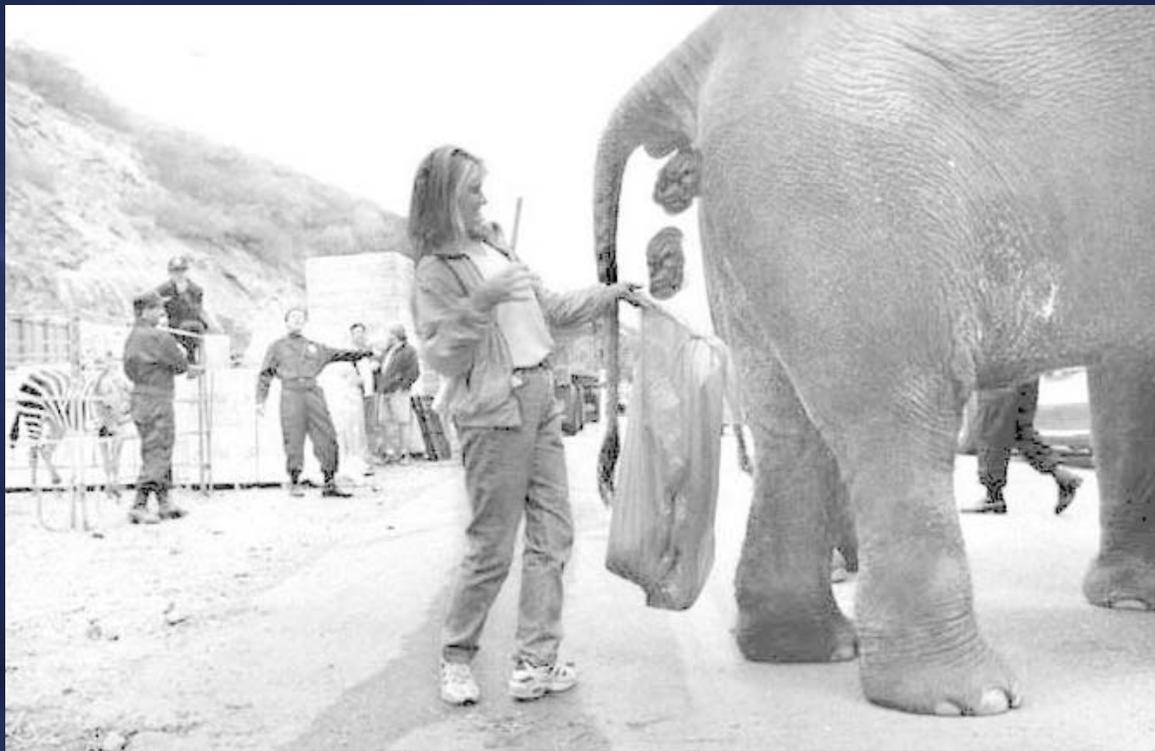
# Coot Necropsy at Portable Lab



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# Science

Science can sometimes be messy...



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# Coot Necropsy at Portable Lab



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# Coot Necropsy at Portable Lab



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# Coot Necropsy at Portable Lab



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# Coot Necropsy at Portable Lab



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# Agency Partners

- Arkansas Dept of Parks and Tourism
- Arkansas Dept of Environmental Quality
- Arkansas Game and Fish Commission
- Veterinary Pathology and Neuropathology  
Dept of the Armed Forces Institute of  
Pathology at Walter Reed
- Arkansas Natural Heritage Commission
- Arkansas State Livestock & Poultry  
Commission
- National Center for Toxicological  
Research, US Food and Drug  
Administration
- Florida Game and Freshwater Fish  
Commission
- Composition Analysis Lab at Fort Collins
- National Oceanic and Atmospheric  
Administration
- North Carolina Wildlife Resources  
Commission
- Office of the Secretary of the Interior
- US Army Center for Health Promotion,  
Aberdeen Proving Grounds
- Mass. Division of Fish & Wildlife
- Savannah River Ecology Lab, Department  
of Energy
- Southeastern Cooperative Wildlife Disease  
Study
- US Army Corps of Engineers
- USEPA Environmental Chemicals  
Laboratory
- US Geological Survey National Wildlife  
Health Center
- US Fish & Wildlife Service
- USDA Poisonous Plant Research  
Laboratory
- Georgia Dept of Natural Resources
- South Carolina Dept of Natural Resources
- National Eagle and Wildlife Repository
- US Forest Service
- Arkadelphia Water and Sewer Dept
- Center for Disease Control
- Maine Dept of Wildlife and Fisheries



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# Academia Partners

- Arkansas State University
- Clemson University
- Henderson State University
- University of Arkansas at Fayetteville
- University of California at Davis
- University of Pennsylvania
- University of Arkansas Medical Science Campus
- Mississippi State University
- Tufts Veterinary School
- University of Minnesota Raptor Research Center
- University of North Carolina
- University of Rochester Med Center
- University of Wisconsin
- Indiana University
- University of South Carolina
- Ouachita Baptist University
- Southeastern Cooperative Wildlife Disease Study, University of Georgia
- Texas A&M University
- Wright State University
- North Carolina State University College of Veterinary Medicine
- Oregon State University
- Boise State University
- Virginia Polytechnic Institute



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# Private Partners

- Arkansas Educational Television Network
- FTN & Associates
- Georgia Power Company
- Lake Murray Association
- Arkansas Children's Hospital
- Dr. Marilyn Baeynes, DVM
- Dr. Tim Palladino, DVM
- American Cyanamid Corp
- Ford, Thorton, Norton and Associates
- Ozark Natural Science Center
- Ross Foundation
- Woodlake Country Club Association
- Numerous Volunteers from the General Public
- Mountain Harbor Resort
- Brady Mountain Resort
- Fed Ex
- St. Vincent Health System
- Entergy Corp



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# AVM Statistics

- Since 1994, 93 bald eagle deaths attributed to AVM
- Discovered at 11 lakes in 5 states
- Species affected: bald eagles, coots, mallards, ring neck ducks, buffleheads, Canada geese, Great Horned Owl, killdeer



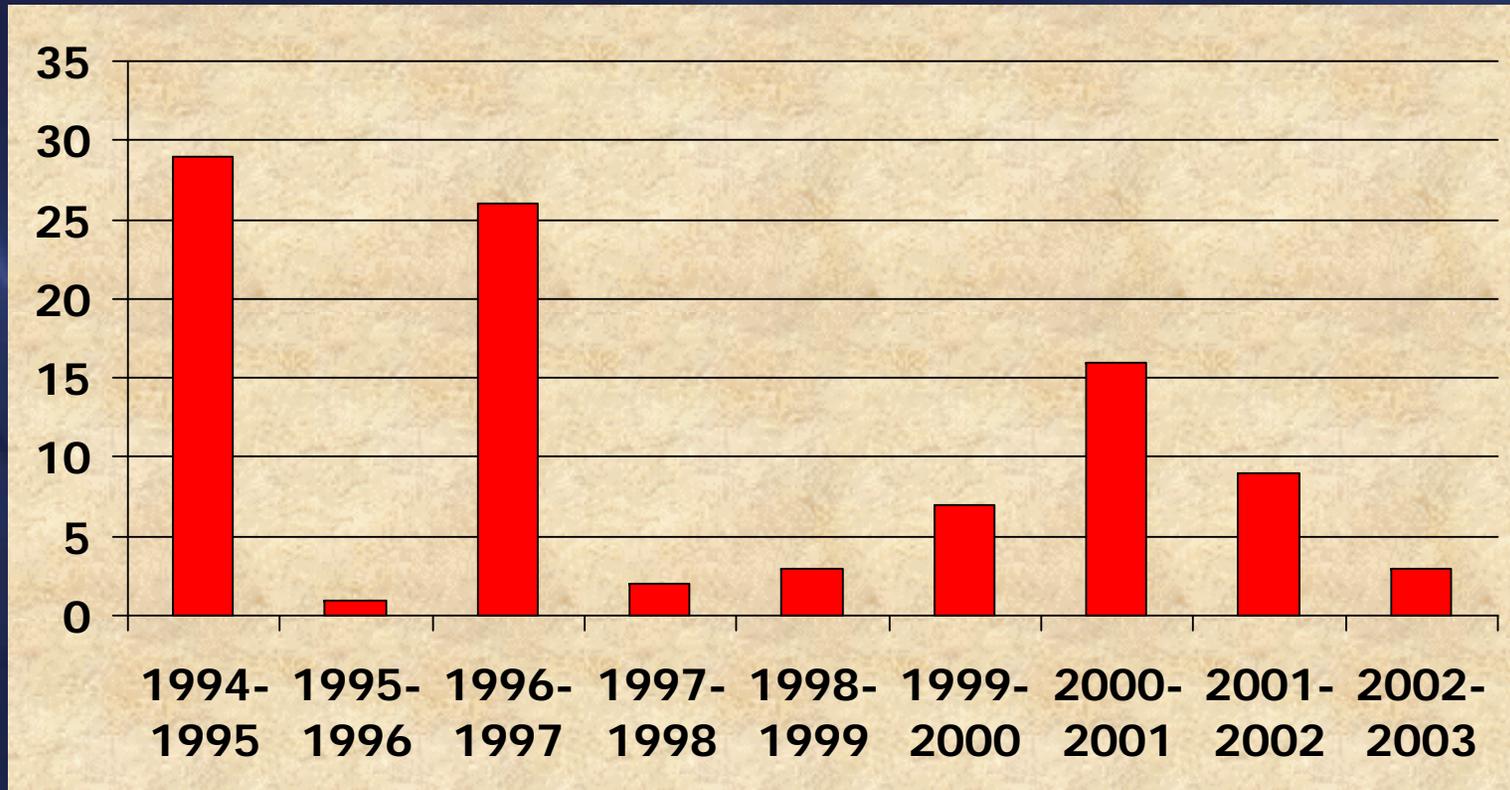
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# AVM Statistics



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# Bald Eagle Deaths by AVM



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# Current Research Efforts

- **Avian Feeding Trials – quail, kestrels, coots, chickens – National Wildlife Health Center**
- **Water Quality Analysis – US Army Corps of Engineers**
- **Eagle Movement and Behavior – Arkansas State University**
- **Coot Banding and Movement – Corps, Arkansas Game and Fish Commission, Ouachita Baptist University**
- **Toxicology Analysis – National Center of Toxicological Research**
- **Plankton Analysis and Aquatic Plant – Henderson State University**
- **Aquatic and Upland Plant Inventories – Arkansas Natural Heritage Commission, Henderson State University**
- **GIS Work – University of Georgia, and FTN & Associates**
- **Foraging Ecology of Coots – Texas A&M University**
- **Epidemiology – University of Georgia Southeastern Wildlife Disease Study Center**
- **Sediment Analysis – US Fish and Wildlife Service**
- **Blue-green algal studies – South Carolina Dept of Natural Resources**

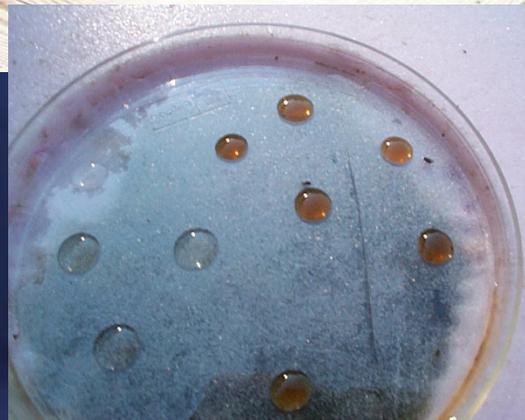


# Current Research Efforts



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# Current Research Efforts



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# Current Research Efforts



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# Current Progress

- AVM has recently been reproduced in chickens by feeding them “pureed” tissue (brain, fat, intestinal tract, kidney, liver, muscle) from AVM coots
- AVM has been reproduced in mallards by feeding them Hydrilla from Strom Thurmond Lake
- AVM has been reproduced in hawks by feeding them frozen coots that had AVM
- Blue-green algae work seems promising



# Current Research Efforts



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# Future?



**WE WILL FIND THE CAUSE!**



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