stage of coccidian parasites found in cats, dogs and humans.

There are some morphological differences between the Sarcocystis cysts of different animals. The sarcocysts found in sheep, rabbits, mice and ducks are macroscopic in size, whereas other mammalian forms (deer, moose and elk) are microscopic. In ducks the cysts are whitish streaks which resemble grains of rice, while the cysts in rabbits are thinner and more elongate.

There are numerous species of Sarcocystis in the literature with...
Sarcocystosis (Continued from pg 1)

most of them being named with respect to the host in which they are found, i.e. S. rileyi (duck), S. cuniculi (rabbit), S. tenella (sheep) and S. miescheriana (pig). These parasites are not always host specific and it is possible that all represent a single species, S. miescheriana, the organism first found in a mouse by Mi-
escher in 1843. Accurate classification will require further knowledge of the complex and varied life cycles of these para-
sites.

Distribution

Sarcocystis is worldwide in distribution. It is found in many species, including sheep, cattle, horses, swine, dogs, cats, rabbits, mice, chickens and hu-
mans. Many wildlife spe-
cies have been found to be infected, including deer, moose, elk, cari-
bou, ducks, seals and many others.

In Michigan, species ident-
tified with sarcocystis are mallard duck, black duck, redhead duck, common goldeneye, blue-winged teal, Canada goose, ring-necked pheas-
ant, moose, cottontail rabbit, red-tailed hawk, cooper's hawk, sharptailed grouse, American woodcock and morning dove. Each year several ducks are diagnosed with the disease. Mallards and black ducks are the ducks most commonly reported with the disease. Occasionally rabbits are identified with the organism. A survey of 208 white-tailed deer from Ontario, Texas and Wisconsin showed 80% to be infected. Four of 16 white-tailed deer were found infected in a small survey in Michigan.

Transmission and Development

The mode of transmission from animal to animal is incom-
pletely understood. For many years it was believed Sarcocystis was transmitted by ingestion of flesh containing sarcocysts. However, now another indirect method of infection has been proven whereby carnivores and omnivores pass an infective stage of the parasite in their feces. An animal is infected by ingesting material contaminated by the infected feces.

Clinical Signs and Pathology

In most animals Sarcocystis infections are not considered to be of any serious pathogenic significance. However, heavy infec-
tions have caused mortality in sheep, pigs and mice. A recent Oregon study reports infection and death in mule deer fawns experimentally inoculated with sporocysts of S. hemionilatrantis. There are no recognizable signs of the infection in most living animals, and a diagnosis of Sarcocystis is almost always made after death. In heavy infections, lameness, weakness and paralysis have been reported.

Diagnosis

A diagnosis is usually made by finding the cysts in striated mus-
cle after the animal’s death. The large cysts found in ducks, sheep, rabbits and mice are easily seen with the unaided dye as grayish to whitish streaks, 1-10 mm in length, running lengthwise with the muscle fi-
bers. In other animals the cysts are micro-
scopic and can only be found by histologi-
cal examination.

Other tests used in the diagnosis of Sarcocystis are complement-
fixation and dermal sensitivity tests.

Treatment and Control

No effective treatment is known. Since the disease can be trans-
mitted by the ingestion of feces containing sporocysts, good sani-
tation and hygiene are important in preventing the disease.

Significance

Domestic animals that are heavily infected may be condemned as unfit for human consumption. Ducks and rabbits are the species of Michigan wildlife that hunters and wildlife biologists are most likely to find infected with Sarcocystis. At this time so much is unknown about Sarcocystis that it is recommended that infected meat from ducks and rabbits not be used for human consump-
tion or fed to cats and dogs.

Bovine Tuberculosis Surveillance Update (Continued from page 1)

Throughout this investigation, what became most obvious was the value of Indiana’s premise ID program and the importance of electronic animal identification. Our ability to identify cattle locations and producer contact information with the click of a mouse saved BOAH countless man hours and travel expenses in these tough budgetary times. That has been the most important partnership component of this entire incident. My thanks to all the producers, veterinarians, Extension educators and the many others who helped make Indiana’s premise ID program the best in the nation.

Bret D. Marsh, DVM
Indiana State Veterinarian

CWD found in captive white-tailed deer in Missouri

The Missouri departments of Agriculture, Conservation and Health and Senior Services and the U.S. Department of Agriculture announced that a captive white-tailed deer in Macon County, Missouri has tested positive for Chronic Wasting Disease (CWD). CWD is a neurological disease found in deer, elk and moose.

“We have a plan in place and our team is actively working to ensure that this situation is addressed quickly and effectively,” said State Veterinarian Dr. Linda Hickam. “Fortunately there is no evidence that CWD poses a risk to humans, non cervid livestock, household pets or food safety.”

The animal that tested positive for CWD was a captive white-tailed deer inspected as part of the State’s CWD surveillance and testing program. Preliminary tests were conducted by the USDA National Veterinary Services Laboratory in Ames, Iowa.

Upon receiving the confirmed CWD positive, Missouri’s departments of Agriculture, Conservation and Health and Senior Services initiated their CWD Contingency Plan. The plan was developed in 2002 by the Cervid Health Committee, a task force comprised of veterinarians, animal health officers and conservation officers from USDA, MDA, MDC and DHSS working together to mitigate challenges associated with CWD.

In February 2010 a case of CWD was confirmed in Linn County on a captive hunting preserve operated by the same entity, Heartland Wildlife Ranches, LLC. The Linn County facility was depopulated and no further infection was identified at that facility. The current case was identified through increased surveillance required by the management plan implemented from the previous CWD incident.

CWD is transmitted by live animal to animal contact or soil to animal contact. The disease was first recognized in 1967 in captive mule deer in the Colorado Division of Wildlife captive wildlife research facility in Fort Collins, Colorado. CWD has been documented in deer and/or elk in Colorado, Illinois, Kansas, Maryland, Michigan, Minnesota, Montana, Nebraska, New Mexico, New York, North Dakota, Oklahoma, South Dakota, Utah, Virginia, West Virginia, Wisconsin, and the Canadian Provinces of Alberta and Saskatchewan. There has been no evidence that the disease can be transmitted to humans.

“Missouri’s proactive steps to put a testing protocol in place and create a contingency plan years ago is proving beneficial. We are in a solid position to follow pre-established steps to ensure Missouri’s valuable whitetail deer resource remains healthy and strong,” said Jason Sumners Missouri’s Deer Biologist, Missouri Department of Conservation.

For more information regarding CWD, please contact Missouri’s State Veterinarian Dr. Linda Hickam at (573) 751-3377.

Source: Missouri Department of Agriculture and CWD Alliance Website (www.cwd-info.org)
Agency Update

BOAH - On the move again

The Indiana State Board of Animal Health (BOAH) central office will be moving to a new location at the Indiana State Fairgrounds the week of December 12. As a result, callers to the agency may experience some disruption to phone services on December 13 and 14.

After December 13, the agency’s new address will be:
Indiana State Board of Animal Health
Discovery Hall, Suite 100
1202 E 38th Street
Indiana State Fairgrounds
Indianapolis, IN 46205

All phone numbers will remain the same. Only the BOAH fax number will change to 317/974-2011.

BOAH will be occupying the newly renovated Discovery Hall, which has historically been known as the “4-H Girls Dorm.” The agency will be located on the building’s ground floor.

New on-line resource for wildlife diseases

The American Association of Zoo Veterinarians (AAZA) has created a new resource for individuals and agencies who work with captive and free-ranging wildlife. The on-line manual covers a wide range of infectious diseases. Each information sheet contains a summary of the animals affected, transmission, clinical signs, severity, treatment, prevention and control, and zoonoses, as well as more detailed information on each of these topics.

Visit the AAZA website at http://www.aazv.org/displaycommon.cfm?an=1&subarticlenbr=759

Disease Surveillance Update

Epizootic hemorrhagic disease in Indiana

Despite an early start, Epizootic Hemorrhagic Disease (EHD) killed only a few deer in Indiana during 2011. In late August a dead 1.5 year old female deer in Vermillion County (west-central Indiana) was confirmed positive for EHD at the Purdue ADDL. Eight phone calls to the Division of Fish and Wildlife, West Lafayette office reported a total of 25-30 deer found dead, usually near water. Calls came from Vermillion, Fountain and Parke Counties.

Southwestern Indiana also had deer reported dead in Gibson, Perry, Pike, Posey, Spencer and Warrick Counties. A Posey County deer was confirmed positive for EHD, Type 2. Muscatatuck National Wildlife Refuge in Jennings County was the only other site reporting dead deer in the state.

Nationwide, EHD was reported in Michigan, North and South Dakota, Montana, Maryland, New Jersey, New York, and Pennsylvania. With the recent hard freezes, no further EHD deaths are anticipated.

EHD is an important disease of white-tailed deer caused by an orbivirus transmitted by a small biting fly of the genus Culicoides. Deer become feverish and seek relief in or near water. Other clinical signs may include a blue tinted tongue or eyes, ulcers on the tongue, drooling, and lack of fear to humans. The disease is often fatal to the deer, but some recover. Deer losses range from just a few to more than 50% of the population in a local area.

Article by D. Zimmerman, Indiana DNR
Leptospirosis Outbreak in Michigan Dogs

More than 20 cases of the life-threatening bacterial infection leptospirosis have been reported in Detroit-area dogs in the past 3 weeks, according to Michigan State University’s Diagnostic Center for Population and Animal Health. Experts there diagnosed the specific strain of the disease, which can cause fatal damage to dogs and can be transmitted to humans.

In most cases, the dogs were not vaccinated against leptospirosis, or they had an uncertain vaccination history. Because this particular type of leptospirosis is associated with contact with rats, stray dogs are typically thought to be at highest risk.

“What is particularly unusual about this outbreak is that the dogs affected are not stray animals, but people’s pets,” said Carole Bolin, director of the Diagnostic Center. "Unfortunately, we expect to see more cases, and this is a very dangerous type of leptospirosis. Many veterinarians have never seen this type in dogs because it was markedly reduced by vaccination." Dr. Bolin performed testing and identified the particular strain of infection as icterohaemorrhagiae, which can cause severe disease in humans and animals. It is commonly carried by rats but also can be transmitted dog-to-dog or dog-to-human. Nine dogs reportedly died or were euthanized as a result of the disease, but there may be others.

Leptospirosis spreads by infected wild and domestic animals. The bacteria (leptospira) that infects these animals can reside in their kidneys, and the host animal may or may not appear ill. They contaminate their environment with living leptospira when they urinate. Pets can become infected by sniffing this urine or by contacting standing water that becomes contaminated by rain and water runoff.  (Source: ProMed Digest V2011 #512, October 29, 2011, edited)

Cranial Mass Causes Odd Turkey Behavior

In October 2011 district wildlife biologist Jeff Thompson submitted a hunter killed wild turkey to the Purdue Animal Disease Diagnostic Lab (Purdue ADDL). The hunter had observed the turkey “falling down and unafraid.” A gross necropsy found a 5 mm mass at the base of the cranium.

The final diagnosis was listed as “Histopathology indicates the intracranial mass was a granuloma. Microscopic granulomas were also found in other tissues. Most likely the cause is E. coli infection.” The necropsy report suggested “the inflammation could have been initiated by trauma of undetermined origin and followed by secondary bacterial infection (E. coli) or septicemia. (Source: Purdue ADDL Case Report #S12-379, and Dean Zimmerman)

Oral rabies vaccine tested in WV

In September, USDA Wildlife Services distributed approximately 80,000 oral rabies vaccination
The mission of the Division of Fish and Wildlife is to professionally manage Indiana’s fish and wildlife for present and future generations, balancing ecological, recreational, and economic benefits. Professional management is essential to the long term welfare of fish and wildlife resources, and providing for human health and safety. Communication between agency professionals and educating the public are important aspects of professional management.

baits in West Virginia to test the effectiveness of the vaccine on raccoons and striped skunks. This is the first time the new ON-RAB® vaccine has been tested in the United States.

To make the baits attractive, the blister packs containing the vaccine are coated with a sweet attractant that includes vegetable-based fats, wax, icing sugar, vegetable oil, artificial marshmallow flavor, and dark-green food-grade dye. According to the Centers for Disease Control and Prevention, about 90 percent of reported rabies cases in the United States are in wildlife. (Source: BOAH October 2011 newsletter).

Beef Cattle Traced to Indiana from South Dakota Bovine TB Case
Seven head of beef cattle traced to Indiana may have been exposed to the South Dakota bovine TB positive case. All seven animals have been identified and placed under quarantine. BOAH will be completing testing on these animals as soon as possible. Indiana’s import requirements remain unchanged. More information about TB and this latest case can be found on the bovine tuberculosis page (http://www.in.gov/boah/2396.htm). (Source: BOAH website)