

SCWDS BRIEFS

A Quarterly Newsletter from the
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Guilty Deer Breeder Fined \$1,500,000

The United States Attorney's Office issued a press release on June 14, 2011, reporting that a licensed deer breeder from Cherokee County, Texas was fined \$1,500,000 after pleading guilty to the felony offense of illegally transporting white-tailed deer into the state and lying about it to a U.S. Fish and Wildlife Service law enforcement agent. The prominent deer breeder admitted to smuggling at least 37 deer from Illinois, Indiana, and Ohio over a 3-year span, despite his full awareness that Texas law prohibited any person possessing deer acquired out of state.

The deer breeder pleaded guilty to deer smuggling and agreed to pay fines of \$1,000,000 to the U.S. Fish and Wildlife Lacey Act Reward Fund, and \$500,000 to the Texas Parks and Wildlife Department (TPWD). In addition to the fines, the deer breeder agreed to a 3-year probation period, with six months of home confinement. During his probation, he is prohibited from participating in commercial deer breeding. In addition, he had to forfeit all illegally imported deer (valued at \$800,000), their progeny (valued at \$290,000), and any biological material from them, including semen (valued at \$961,500), antlers, cloned deer, or taxidermy specimens.

The Wildlife Division of the TPWD conducted an epidemiological investigation in cooperation with veterinarians and wildlife disease experts with the Texas Animal Health Commission, Texas Department of State Health Services, and Texas A&M College of Veterinary Medicine, as well as accredited veterinarians actively involved with the deer breeding industry. All 344 deer in the deer breeder's facility were killed in order to be tested for bovine tuberculosis (TB) and chronic

wasting disease (CWD). Fortunately, test results were negative for both diseases.

The TPWD has had an intensive CWD surveillance program since 2002. Fortunately, neither CWD nor bovine TB has been found in the highly valued Texas wild deer herd. Prevention of disease introduction is critical because management or eradication of infectious disease in a wildlife population may be difficult or impossible. Deer hunting in Texas generates an estimated \$1.2 billion in retail sales with a total economic output of more than \$2 billion annually.

This case was investigated by the Special Operations Unit of the Texas Parks and Wildlife Department and the U.S. Fish and Wildlife Service. The full press release can be found at (<http://www.justice.gov/usao/txe/News/2011/edtx-powell-061411.html>). (Prepared by John Fischer)

EHDV-7 Research at SCWDS

Epizootic hemorrhagic disease viruses (EHDV) have long been recognized to cause disease in North American wild ruminants, namely white-tailed deer (WTD). Together with bluetongue viruses (BTV), these closely related orbiviruses are transmitted by *Culicoides* biting midges and are the cause of hemorrhagic disease (HD). There are seven known serotypes, or varieties, of EHDV and 24 known serotypes of BTV. Although EHDV and BTV are widely distributed throughout the tropical and temperate climatic zones of the world, the distribution of the different serotypes varies. Until recently, only EHDV serotypes 1 and 2 have been known to occur in North America. However, SCWDS personnel isolated EHDV-6 in 2006 from dead WTD in Indiana and Illinois, and the virus now is

Continued...

considered to be established after virus isolations from WTD in five additional states from 2007 through 2010. White-tailed deer are known to be highly susceptible to clinical disease and death with each of these three serotypes.

Dealing with periodic HD outbreaks among WTD during the summer and fall is a regular part of the job for many wildlife managers in the U.S. However, our wild ruminants stand alone, because significant EHDV-related clinical disease is not reported among wildlife in other parts of the world, despite the presence of the viruses. Bluetongue virus infection is well known to cause mild disease in cattle and severe disease in sheep, while EHDV infection only rarely causes clinical disease in domestic or wild ruminants, with the exception of WTD.

With EHDV and BTV it is important to remember that infection does not always equal disease, and when disease does occur, it is variable in severity, both between and within species. Historically, EHDV infection in cattle results in subclinical infections, and only rarely in mild disease. However, since 2003, EHDV-6 and-7 disease outbreaks in cattle in several countries around the Mediterranean Sea have renewed interest in the role of EHDV as pathogens of cattle. For example, in 2006, EHDV-7 was the cause of an intense and widespread outbreak in Israeli cattle. Although mortality was <1%, a 10-20% drop in milk production resulted in economic losses in the Israeli dairy industry. To understand if North American hosts are susceptible to this virus, SCWDS personnel have conducted collaborative research to get answers to some basic questions. Two essential requirements for a vector-borne pathogen to become established in a new ecosystem following introduction are the presence of 1) a susceptible host, and 2) a competent vector. Thus, our research objectives were to determine if WTD are susceptible to infection and disease with EHDV-7 and to determine if *Culicoides sonorensis*, considered the primary vector of EHDV in North America, can transmit the virus to susceptible WTD.

During the spring of 2010, we completed an experimental infection of WTD and performed a vector transmission study. Six 7-month-old, hand-raised WTD were experimentally infected

with EHDV-7 and monitored for signs of disease. Monitoring included visual and physical examinations, and blood collection for virus isolation, serology, and clinical pathology tests, including complete blood cell counts and clotting time assays. For the vector transmission study, colonized *C. sonorensis* provided by the Arthropod-Borne Animal Diseases Research Unit (USDA-ARS, Manhattan, KS) were fed on these deer during peak viremia (5-7 days post inoculation [DPI]) and subsequently were allowed to feed on another susceptible WTD following an incubation period.

All six inoculated deer developed viremia and exhibited varying degrees of clinical disease. Four of six deer died acutely or were euthanized due to severity of disease between 5-7 DPI. Clinical signs, clinical pathologic findings, viral dynamics, and postmortem findings were consistent with HD in this species. Common clinical signs included inappetence, rough hair coat, depression, redness of thinly haired regions, and hyperemic conjunctiva and oral mucosa. Reluctance to rise, recumbency, bleeding tendencies, and oral hemorrhages also were observed. The two deer that survived infection exhibited mild to moderate clinical disease and recovered over a two to three week period. Postmortem lesions in the other four deer included widespread congestion, pulmonary edema, and hemorrhages in multiple tissues, including the pulmonary artery, which is considered the 'classic' lesion of HD (see figure).

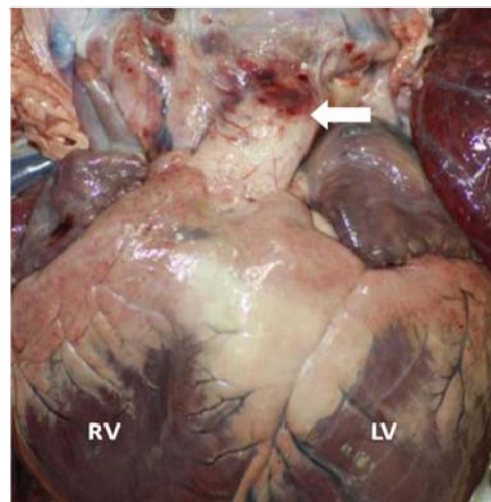


Figure: The heart of a WTD that died nine days after infection with EHDV-7. The hemorrhage at the base of the pulmonary artery (arrow) is considered to be a "classic" lesion of HD when present. LV = left ventricle, RV = right ventricle.

Culicoides sonorensis biting midges that fed on the infected deer during peak viremia and then were incubated for 14-16 days successfully transmitted the virus to a susceptible WTD. This deer developed viremia, exhibited severe clinical signs, and had to be euthanized nine days post exposure due to the severity of disease. Of the 176 midges that fed on the viremic deer, 47% tested positive for EHDV-7 at 10-16 days post feeding. Of these 82 virus-positive midges, 28% (23/82) had a relatively high titer that presumably would be sufficient to allow transmission to a new host.

Overall, we demonstrated that WTD are susceptible to EHDV-7, and the virus can be transmitted by the predominant North America EHDV vector. The fact that clinical disease caused by EHDV-7 is identical to that of HD caused by EHDV and BTV serotypes in the U.S. is significant. It highlights the importance of thorough diagnostic evaluations (i.e., virus isolation and serotype-specific diagnostics) while investigating HD outbreaks. Based on field signs, a presumptive diagnosis of HD is commonly made, but without submission of tissue samples for virus isolation and identification, we cannot confirm HD and we miss the opportunity to detect novel viruses. (Prepared by Mark Ruder)

Jack Crockford

“And King David said to his servants, do you not know that a prince and a great man has fallen this day in Israel?” (2 Samuel 3:38). Jack A. Crockford, 88, passed away in Atlanta on July 16, 2011, attended by Fio, his beloved wife of 63 years, his son, Bill, and his daughter, Gloria. Jack was the epitome of modesty, and he would be embarrassed by this comparison, but it is appropriate: He was, indeed, a prince of a man with few peers, and he was held in high esteem by all who knew him.

Jack’s family suggests that donations may be made in his name to Hospice Atlanta, 1244 Park Vista Dr., NE, Atlanta, GA 30319; US Air Force Academy, 3116 Academy Dr., Suite 200, USAF Academy, CO 80840-4475; or Piedmont Hospital, 1968 Peachtree Road, NW, Atlanta, GA 30309.

Jack was born in Woodland, Michigan, in 1923 and was attending Michigan State University when the United States entered World War II. He immediately volunteered and served until war’s end in the U.S. Army Air Corps’ 13th Combat Cargo Squadron. Jack flew 432 missions in an unarmed C-46 cargo plane over the Himalaya Mountains (“The Hump”) between India and China, hauling cargo and wounded British soldiers. He often was over unfriendly territory in the worst possible weather with minimal fuel, searching for short airstrips carved in the jungle. He had to rely on the most rudimentary navigation instruments, his experience from previous missions, and his determination. It was one of the most dangerous Air Corps jobs in the Burma Theatre, and Jack received several citations and medals, including the Distinguished Flying Cross with an Oak Leaf Cluster.

When the war ended, Jack completed his education in wildlife biology at Michigan State. Then, luckily for us, in 1947 his first job as a wildlife biologist was with the Georgia Game and Fish Commission. Here he initiated a statewide program to restock white-tailed deer in areas where they had been extirpated in the 1920s, ‘30s, and ‘40s. As part of this effort, he trapped deer where they remained in the north Georgia mountains and Georgia coastal islands and released them in areas throughout the state.

It was a difficult and often unproductive effort. The primary methods were using box traps or positioning large nets and driving deer into them and neither was very efficient. Jack soon implemented a long-held idea and, with encouragement and assistance from fellow wildlife biologist Jim Jenkins and others, he invented the CapChur Gun for the remote delivery of tranquilizer drugs. After much trial and error, the equipment and techniques were perfected. The tranquilizer dart gun revolutionized the capture and translocation of wild deer and facilitated the restoration of whitetails in many areas of the United States. The gun also has been used successfully on many other species of wild (and domestic) animals all over the world (see SCWDS BRIEFS Vol. 23, No 2). Others who worked on the dart gun and the drugs used with it were Dr. Frank Hayes and, later, Dr. Sheldon D. Feurt and

Harold C. "Red" Palmer. Jack was unpretentious and played down his role, but he was the main force behind the invention and success of the dart gun.

Jack's association with Frank Hayes was most fortuitous. When Jack and Jim needed the expertise of a veterinarian knowledgeable in the use of drugs and antidotes, they enlisted the help of Frank, who was on the teaching faculty at the University of Georgia's School of Veterinary Medicine. When Dr. Hayes and others started SCWDS a few years later in 1957, Jack became a staunch friend and supporter, and he remained so for the rest of his life.

When Jimmy Carter became Governor of Georgia in 1971, Jack was Chief of Game in the old Georgia Game and Fish Commission. Governor Carter soon reorganized all the departments in state government and, recognizing Jack's exceptional knowledge, skills, and expertise, made him Director of the Wildlife Resources Division of the newly created Department of Natural Resources (DNR).

Jack received numerous awards and much recognition for his many successes in wildlife management. One of the best came at his retirement in 1978 when the Georgia DNR named the 16,000-acre Crockford-Pigeon Mountain Wildlife Management Area in his honor. Jack's distinguished career should be inspirational to everyone involved with wildlife management and the conservation of our natural resources.

Jack was not idle after retirement. He spent a lot of time hunting and fishing in many areas of the United States and other countries. When he was not traveling, Jack spent almost all day in his workshop. He was a skilled gunsmith, engraver, and knife maker and built magnificent muzzle-loading rifles. Jack and Fio were great friends with Jimmy and Rosalynn Carter. When Mr. Carter was President, one of Jack's prized hand-made Kentucky flintlock rifles adorned the wall of the Oval Office in the White House.

President Carter delivered a warm, personal eulogy at Jack's memorial service in Atlanta on July 21. He spoke of his admiration and respect for Jack and recounted the friendship he and

Rosalynn had enjoyed with Jack and Fio for 40 years. The President had a Crockford-made folding knife in his pocket at the service, which he removed and showed to some of the people seated near him (this was frowned on by the Secret Service agents who accompanied the President!).

In his book *Sharing Good Times*, President Carter had this to say about Jack: "I have spent many days with Jack Crockford. We have hunted woodcock along the shores of the Chattahoochee River, wild turkey on my farm and others, ruffed grouse in Michigan and in the North Georgia mountains, ducks near the coast, and quail in the woods and fields south of my home in Plains. His quiet comments about flora and fauna have been constant lessons, and have helped to shape my concerns about the protection of wildlife.

Jack is a superb artisan in wood and metal, and his hand-crafted knives are sold in the finest sporting shops. For my fiftieth birthday, he made a muzzle-loading rifle for me, with powder horn and other appurtenances, and taught me to load and fire it. It is one of my prized possessions, which I have proudly displayed at the governor's office, in the White House, and now at home."

Jack Crockford was, indeed, a wonderful human being, and it was a tremendous privilege to have known him and to have been his friend for more than 45 years. He is missed and mourned by many. (Prepared by Gary Doster)

Gary Doster Retires, Again

Gary began his 45-plus years with SCWDS in 1965 as a research assistant. He confesses that he took the job because it sounded interesting, and that he had no intention of staying with SCWDS for long. Thirty years later he retired from The University of Georgia; however, he returned to SCWDS as a part-time employee to continue the good work he'd begun during his first 30 years. And now, over 15 years since formally retiring, he is hanging up his keyboard.

Many of Gary's most notable accomplishments are in the fields of wildlife disease, parasitology,

writing, and editing. He discovered several new species of helminth and arthropod parasites of white-tailed deer, wild turkeys, and bobwhite quail, and one of the stomach worms of deer that he discovered was named in his honor: *Trichostrongylus dosteri*. Gary authored or co-authored four book chapters and 40 publications in scientific journals and symposia proceedings.

Gary covered a lot of ground, conducting field work in 20 states, Puerto Rico, and Haiti, and many former SCWDS graduate students have Gary to thank for the guidance and assistance he provided for their MS and PhD research projects. Gary's accomplishments were recognized nationally in 1974, when he was one of 10 wildlife professionals to receive the American Motors Conservation Award, and in 1980, he received his Certified Wildlife Biologist credentials from The Wildlife Society.

In 1985, Gary and former SCWDS Director Dr. Frank Hayes launched our newsletter *SCWDS BRIEFS*: Gary served as its only editor for more than 26 years. The *SCWDS BRIEFS* is distributed four times every year to more than 2,700 wildlife biologists, veterinarians, physicians, researchers, policy-makers, and others around the world. In addition to the newsletter, Gary has prepared and edited the quarterly reports for the agencies that provide financial support to SCWDS via grants and cooperative agreements.

Those of you who know Gary personally know that he also has compiled an enviable list of accomplishments outside the workplace. He has written several articles for hobby magazines and has published eight books; his ninth and tenth books will be released later this year. These articles and books concern the countless Georgia historical documents and artifacts that Gary collects.

But above all, Gary is a collector of friends, and he formed lifelong friendships with some of the best wildlife professionals and veterinary scientists in the world that he met while working at SCWDS. We all wish Gary the absolute best in the future and offer grateful thanks to him for his hard work and dedication to SCWDS, wildlife managers, and wildlife; his numerous and important contributions to the field of wildlife

health; his professional representation of SCWDS in the field, at meetings, and in print; and especially for his wonderful sense of humor, guidance on the best BBQ joints in a 15-state area, and his friendship. (Prepared by John Fischer)

Time to Move On

When I came to work at SCWDS in 1965, I never expected to still be here almost 46 years later. I expected to work here a year or two, then go and look for a "real job." It just looked like something fun to do for a while. It was.

Likewise, when Frank Hayes and I started this newsletter in 1985, I never expected it (and me) to still be going strong more than 26 years later. But here we are.

And now it is time to go and do something else with the rest of my life. It is common for young folks nowadays to sign their computer and text messages with "LOL." When asked what that means, some say "laughing out loud" and others say "lots of love." Please accept it from me whichever way you prefer. So long and LOL, Gary

Recent SCWDS Publications Available

Below are some recent publications authored or co-authored by SCWDS staff. Many of these can be accessed online from the web pages of the various journals. If you do not have access to this service and would like to have a copy of any of these papers, let us know. Many can be sent to you electronically with minimum effort; others will be mailed to you. For your convenience, please indicate requested publications, fill out the form on page X, and check the appropriate box to receive either an electronic copy or a hard copy and return it to us: Southeastern Cooperative Wildlife Study, College of Veterinary Medicine, University of Georgia, Athens, GA 30602.

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