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COORDINATOR COMMENTARY

By Dr. Thomas DeLiberto

Despite the many financial challenges faced by Wildlife Services and our state and federal partners, we all continue to implement very successful wildlife health programs. This was particularly the case for the NWDP in fiscal year 2011. Despite a 36% decrease in funding, we were successful in implementing a comprehensive and diverse surveillance, control, and emergency response program, which also made significant contributions to our understanding of disease ecology. During 2011, we assisted state, federal, and tribal partners in monitoring over 75 pathogens, toxins, or disease syndromes throughout the U.S. This included sampling over 12,000 wild birds for avian influenza, 3,500 feral swine for over 10 diseases including classical swine fever, and over 7,000 wild animals for exposure to plague and tularemia. We even managed to initiate a few new projects last year. Through a partnership with the Food and Drug Administration and the National Institutes of Health, we began sampling feral swine and white-tailed deer for Hepatitis E virus to determine if either of these species are reservoirs of this pathogen. Also, we initiated a project to improve understanding of the distribution of *Culicoides* species and their abilities to serve as hosts for blue-tongue and epizootic hemorrhagic disease; we were able to conduct 52 trap nights in four states.

More recently, we embarked on

two additional projects. The first is a collaborative one with Cornell University to examine the role of wild carnivores in the ecology of parvoviruses. The objectives of this study are to determine 1) the prevalence of parvovirus infection in coyotes and other carnivores; 2) the genetic diversity of viruses that are circulating in wild populations; 3) if coyotes (and to a lesser extent other carnivores) play important roles in the maintenance, spread, and evolution of canine parvovirus; and 4) which species may be involved in the exchange of viruses between the sylvatic and domestic animal interface.

The second relatively new project involves monitoring for *Baylisascaris* species in wildlife. The objectives for this project are to 1) determine the apparent prevalence and distribution of *B. procyonis* in raccoon populations and *B. columnaris* in skunk populations at a national scale; 2) identify and document factors associated with *B. procyonis* expansion; 3) correlate human cases with infection rates in wildlife and domestic animals; and 4) compile risk assessment maps for humans living in endemic areas.

In 2012, many of our cooperators will again feel the effects of the downturn in our economy, and the NWDP will share that pain with them. This year we are expecting an additional 21% reduction in our budget, which will

undoubtedly impact the services we deliver. While budget reductions are problematic for everyone, they do have at least one potential benefit; they tend to encourage closer collaboration through the need to share resources in pursuit of common goals. Within APHIS, we continue to look for ways to improve our services and the cost-effectiveness of how we deliver them. For example Veterinary Services, International Services, Animal Care, and Wildlife Services have formed a Steering Committee that will be looking for ways in which we can more efficiently deliver our services with regard to diseases in wildlife.

Within Wildlife Services, we continue to look for efficiencies as well. In particular, we are examining how to provide wildlife disease surveillance, control, and research products and services to you more effectively and cost-efficiently. In fact, during the months of December and January, I have been acting as an Assistant Director at the National Wildlife Research Center, in part, to look for such efficiencies and cost-saving opportunities. Finally, we will continue to look for opportunities to enhance collaborations with our existing state and federal partners, as well as develop relationships with new partners.

NWDP

The wildlife drawings on this page are original artworks created by the National Wildlife Disease Program's former Administrative Support Assistant Erika Kampe (prairie dog) and Wildlife Technician Sarah Goff (ducks)

RACCOON ROUNDWORM SURVEILLANCE IN WYOMING

By Michael Pipas

The raccoon roundworm, *Baylisascaris procyonis*, is an intestinal nematode that has been shown to infect over 90 species of birds and mammals in North America. Raccoons (*Procyon lotor*) become infected with *B. procyonis* via direct and indirect transmission. Juvenile raccoons exhibit the highest prevalence rates. Kits typically become infected by ingesting eggs in the mother's fur while nursing, during self-grooming or grooming of other individuals, and possibly from foraging and ingesting feces on the den floor. Adult raccoons typically become infected through consumption of infected intermediate hosts.



Raccoon

come infected after accidentally ingesting infective eggs in soil, water, or on objects that have been contaminated with infected raccoon feces. Raccoon latrines heavily laden with *B. procyonis* eggs may serve as important focal points for disease transmission. These sites may also provide substantial risks to humans, especially children playing in and around these areas.

Raccoon roundworm eggs remain viable for months to years in the environment depending upon environmental conditions such as moisture, humidity, and temperature. Eggs are also resistant to all commonly used disinfectants, and can survive in 2% formalin indefinitely. Although human infections are rare, they are typically severe, often resulting in disability or

death. Infants and toddlers are particularly susceptible to infection, due to exploratory behavior patterns such as pica.

While relatively few surveillance efforts for this parasite have been undertaken, wildlife disease experts and public health officials in Wyoming agreed on the need of a surveillance program. Consequently, a project was initiated in 2009 to investigate the occurrence of *B. procyonis* in the state. Raccoons for this project were primarily collected opportunistically, however, targeted trapping was conducted in areas underrepresented by the opportunistic sampling effort.

Raccoons were necropsied and the contents of the small intestines were examined for the presence of adult worms. These worms are relatively large, beige or tan, and females range from 20-22 cm in length; males appear similar but measure 9-10 cm. While it is thought that *B. procyonis* and a similar species *B. columnaris* are found primarily in their host species, raccoons and skunks,

(Continued on page 3)

SURVEILLANCE OF WILD CANID DISEASE IN PENNSYLVANIA

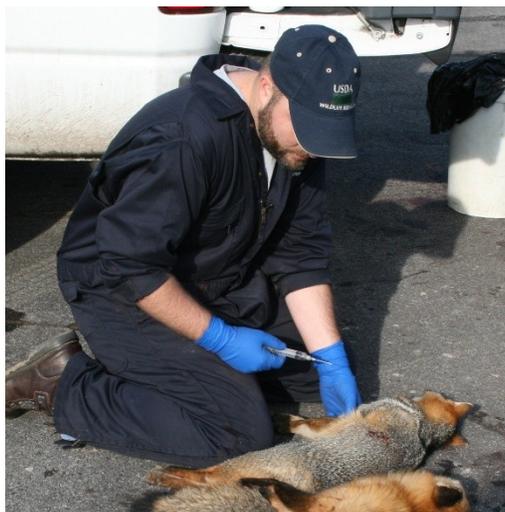
By Kyle Van Why

Collaborative research and surveillance projects have been a hallmark of the NWDP since its inception. The plague and tularemia project is an example of the benefits derived from cooperative efforts. NWDP's partnership with CDC has enabled us to assimilate serologic data to assess the distribution of these diseases in wildlife at a national level. Pennsylvania has contributed more than 700 wild canid samples over the past few years. Most often, samples are collected opportunistically from animals obtained for other operational objectives. Pennsylvania Wildlife Services has collected samples from coyotes (*Canis latrans*), red fox (*Vulpes vulpes*), and gray fox (*Urocyon cinereoargenteus*) through cooperative efforts with their own specialists, but also private trappers, and at organized predator hunts. Collection stations established at special hunts enhances sample collections. These stations also provide for educational opportunities to explain wildlife disease issues to the general public, and for volunteer students to gain experience collecting biological specimens.

Northeast Infectious Disease Diagnostic Laboratory on a project to investigate parasitic diseases in wild canids. The study focused on mange, heartworm, endoparasites, and tick borne diseases. Visual inspections were conducted and samples collected (hearts, spleens, blood, and intesti-

nal tracks) from over 400 animals.

All of the 25 tick species occurring in Pennsylvania are known vectors of at least one of these pathogens, which can cause disease in humans, domestic animals, and wildlife.



Wildlife Disease Biologist Kyle Van Why collecting samples from a red fox

Polymerase Chain Reaction (PCR) methods were used to determine presence of active infections of Lyme disease (*Borrelia burgdorferi*), Rocky Mountain Spotted Fever (*Rickettsia rickettsia*), *Babesia* species, *Anaplasma phagocytophilum*, and *Ehrlichia chaffeensis*. Lyme disease and Rocky Mountain Spotted Fever were not identified in any of the samples. The highest apparent prevalence of *E. chaffeensis* were found in coyotes (17.4%), with significantly lower levels detected in red fox (6.6%) and gray fox (2.9%). Prevalence for *A. phagocytophilum* were similar among coyotes (3.1%), red fox (4.2%), and gray fox (2.9%). Alternatively, while prevalence of *Babesia* species were 4.4% in coyotes, they were much lower in red fox (0.9%), and the pathogen was not detected in gray fox.

A current cooperative project with Juniata

(Continued on page 4)

Wildlife Services assisted a graduate student from East Stroudsburg University's

NEWCASTLE DISEASE SURVEILLANCE IN MINNESOTA

By Paul Wolf and Dr. LeAnn White (USGS- National Wildlife Health Center)

Newcastle disease virus is a serotype 1 avian paramyxovirus. The classification of this virus as a virulent or nonvirulent strain is based on OIE (Office International des Epizooties) guidelines and reflects a particular strain's ability to cause neurological or respiratory disease in poultry. Virulent viral strains are classified as select agents by the United States Department of Agriculture. Newcastle disease virus can be transmitted through direct contact with secretions or aerosols from an infected bird, or by objects that come into contact with infected birds. If introduced to domestic poultry operations, morbidity and mortality rates can be as high as 100% and 90%, respectively. The virus can also cause significant mortality events in wild birds, particularly double-crested cormorants (*Phalacrocorax auritus*).

Newcastle disease was first documented in double-crested cormorants around 1975, but the first widespread epidemic in the United States occurred during 1992. This epidemic was estimated to have killed 20,000 birds in Minnesota, Nebraska, South Dakota, and North Dakota. Since that time, Newcastle disease outbreaks in double-crested cormorants have continued to be concentrated in the upper Midwest and Great Lakes region. The United States Geological Services, National Wildlife Health Center has documented an increase in frequency with outbreaks occurring in the Midwest each year between 2006 and 2010.

It is unknown how Newcastle disease virus is transmitted and maintained in double-crested cormorants, or how likely it is for the virus to be transmitted to domestic poultry.

However, during 1992 Newcastle disease virus was discovered in a poultry facility in North Dakota and the source of the virus was thought to be an infected cormorant colony located about 4 miles away. Outbreak response included depopulation of 23,000 domestic turkeys resulting in significant economic impacts.

Minnesota's poultry industry (egg, broiler, and turkey) is valued at approximately \$1 billion annually. Its turkey production ranks number one in the country, with egg and broiler production ranking seventh and eighteenth, respectively. Given the proximity of episodic wild bird Newcastle disease events to poultry operations in Minnesota, a more comprehensive knowledge of its ecology is critical for understanding transmission pathways and developing risk analyses. Wildlife Services has been assisting tribal, state, and federal agencies with the investigation of morbidity and mortality events throughout Minnesota since 2008. Through these efforts, Newcastle disease virus has been documented in 13 of the 47 known cormorant colonies in the state.

In June 2011, the NWDP partnered with the National Wildlife Health Center and Minnesota Department of Natural Resources' Wildlife Health Program on a project to study the ecology of Newcastle disease virus in double-crested cormorants. Tissue and serological samples were collected from 544 birds at three sites during the months of June, July,



Wildlife Disease Biologist Paul Wolf collecting samples from a cormorant

and August, 2011. The study sites were selected based on colony size, species diversity, spatial distribution and proximity to commercial poultry operations. Depending on available resources, up to four additional years of sampling may be conducting to evaluate prevalence of disease during epidemic and quiescent years.

(Raccoon Roundworm—Continued from page 2)

respectively, specimens from a subsample of raccoons are sent to Purdue University for species confirmation.

Nematodes were enumerated to determine intensity of infection by sex and age of raccoons. Fecal flotation for roundworm eggs was conducted on a proportion of samples to obtain an estimate of false



Round worms recovered from a raccoon

negatives as determined by the presence/absence of adult worms in the intestines.

To date, Wildlife Services personnel have examined 363 raccoons collected from all of Wyoming's 23 counties. Prevalence based on the presence of adult worms was 40.5%. Intensity of infection ranged from 1

to 98 worms per raccoon (mean=11.6). Prevalence of *B. procyonis* from fecal samples was 30.1% (71/236). Intensity ranged from 2 to 100+ eggs/gram of feces. Nineteen raccoons that were positive by fecal flotation were negative for adult worms. Two possible explanations for this discrepancy include undetected adult worms in the intestine, and worms in atypical locations (e.g., locations other than small intestine),

A better understanding of the distribution and prevalence of *B. procyonis* in Wyoming is an important step in educating the general public as well as the medical community on the risks and hazards of raccoon roundworm infection.

INVESTIGATING THE NEWLY DESCRIBED WELLFLEET BAY VIRUS

By Randy Mickely

Hundreds to thousands of common eiders (*Somateria mollissima*) have been found sick and dead along the coast of Cape Cod, Massachusetts every spring and fall since approximately 1998. Banding locations from dead common eiders over the past 10 years indicated that the majority of affected birds were originally banded in eastern Quebec, Nova Scotia, Newfoundland, or eastern Maine. Another important observation is a preponderance of a single sex (either males or females) affected within each morbidity/mortality period.

In an effort to determine the cause of these morbidity and mortality events, Wildlife Services collected biological samples during 2010 and submitted them to the U.S. Geological Survey's National Wildlife Health Center and the University of Georgia's Southeastern Cooperative Wildlife Disease Study. Diagnostic testing identified a novel Orthomyxovirus in the proposed genus Quarjavirus, and Scientists at the National Wildlife Health Center have demonstrated pathogenicity in naive common eider ducklings through experimental inoculations. Presently, the common eider is the only species known to be affected by this novel virus, which is being referred to as the Wellfleet Bay virus.

Orthomyxoviridae are RNA viruses consisting primarily of the influenzas. While influenzas are spread through inhalation of aerosols, some genera in this family are spread through insect vectors. Currently, the mode of transmission of Wellfleet Bay virus is not known.

The common eider is considered a management species of concern in the U.S. Fish & Wildlife Service's Focal Species Strategy for Migratory Birds. Cape Cod and Nantucket Sound serve as important migratory staging

and overwintering areas for eiders. Consequently, concern over the impacts of Wellfleet Bay virus is increasing.

Plans are being developed for a team of scientists from the U.S. Fish and Wildlife Service, the Southeastern Cooperative

Department of Natural Resources, Maine Department of Inland Fisheries & Wildlife, U.S. National Park Service's Boston Harbor Islands, and others will assist through routine bird banding efforts.

Scientists from the Southeastern Cooperative Wildlife Disease Study are validating a serologic test that will enable them to screen sea ducks, including common eiders, and other bird species for evidence of prior exposure to the Wellfleet Bay virus.

Wildlife disease biologists from the NWDP have collected wings from more than 200 common eider carcasses at the Wellfleet Bay site. Studies of feather patterns from these wings will provide information about the age and sex ratio of affected birds. Isotope analysis of feathers also will suggest geographic regions where affected birds have traveled during their annual migration patterns.

During December, Wildlife Services assisted a team of biologists from the U.S. Department of Interior and the Rhode Island Department of Environmental Management to capture common eiders with floating mist nets. The team attached satellite tags to birds to track their movements, and collected oropharyngeal, cloacal, and blood samples to determine the antibody prevalence of Wellfleet Bay virus.

Ongoing investigations of the Wellfleet Bay virus will provide insight to this emerging disease, predict impacts to common eiders, and evaluate the threat to other species. At present, there does not appear to be any direct threat to poultry, but increased knowledge will also enable a more thorough understanding of potential risks to agriculture.



A common eider found on a beach in Massachusetts

Wildlife Disease Study and the NWDP to collect samples from eiders during normal bird banding activities this spring and summer. Blood and associated nest-dwelling parasites will be tested for the Wellfleet Bay Virus. Funding to support this activity will be provided by the U.S. Fish and Wildlife Service through their Avian Health and Disease Program. Several groups including L'Universite de Quebec, Nova Scotia

(Wild Canid Surveillance—Continued from page 2)

College is assessing the presence of heavy metals in coyotes. Wildlife Services provided them with more than 200 liver and kidney samples during 2011. More than 10 undergraduate students participated in the project this past year, providing them the opportunity to acquire valuable experience in biological sampling and testing techniques. Preliminary results indicated that heavy metal lev-

els were generally within normal ranges; though there were variations among regions. Wildlife Services plans on assisting with the activity again during 2012.

Other projects on which the program assisted include a University of Pittsburgh study on spiny headed worms (*Acanthocephala* species), an American Museum of Natural History study on heartworm investigation, and a genetic analysis

study of Pennsylvania coyotes by Grove City College. Assistance also has been provided on an ongoing Agricultural Research Service project investigating *Toxoplasma gondii* and *Neospora caninum* in wild canids. Future activities include participation in a NWDP and Cornell University national canine parvovirus monitoring project, and contributing tissue samples to the United States Fish and Wildlife Services' Forensics Laboratory's reference collection.

USING DOGS FOR DISEASE SURVEILLANCE IN FERAL SWINE

By Clint Turnage

Locating and capturing feral swine (*Sus scrofa*) to conduct disease surveillance can be a difficult and a labor-intensive endeavor. Biologists are constantly looking for approaches to be more efficient. Traps, snares, night-vision optics, game cameras, automated game feeders, ATVs, and other hi-tech tools are frequently used to capture feral swine. However, one of the most productive tools available may be one used since ancient times - the hunting dog.

Hog dogs can be divided into two groups; bay dogs and catch dogs. Blackmouth Curs, Catahoulas, and Plott Hounds are common breeds used for bay dogs, while American Pit Bull Terriers are generally used as catch dogs.

The hog hunting process starts with equipping each dog with a telemetry or GPS tracking collar. Dogs pursuing feral swine often cover large territories and



Dogs baying a feral hog

without tracking collars they could easily become lost. Many dog handlers also outfit their dogs with cut collars and cut vests to reduce risk of injury from the sharp teeth of adult boars. Others argue that these collars and vests restrict a dog's maneuverability, increasing the chance of injury.

Once equipped with tracking collars and protective gear, dogs are brought to an area where feral swine are known or likely to occur. Hogs leave a scent trail wherever they go. Strength of the scent trail and how long it lingers in the environment varies among hogs and depends on the substrate where it is left. Over time, the scent fades until it becomes undetectable to dogs.

Locating a fresh scent trail is one of the most important tasks for hog dog handlers. Sometimes a trail is located quickly, but on other days an entire day may be spent searching for a trail worth pursuing. Hog densities in the targeted area, precipitation, and level of hog activity all affect chances of crossing a traceable scent trail. Hunters often travel great distances looking for fresh hog sign or other indicators where trails are likely to be found. Hunters also may spread bait to concentrate feral swine before hunts.

Dogs are only released after a favorable trail is located. Number of dogs initially released varies at the discretion of the handler. Many hunters choose to run between three and six dogs at a time, releasing "fresh" dogs when the initial group tires. Other hunters may run as many as 10 to 15 dogs at a time. Like many aspects of hunting, every hunter has their own preferred approach.

When the dogs are first released they usually spread out looking for fresh scent. If an individual dog takes off running in a particular direction its body language may indicate that it has found a trail. Frequently, other dogs will then find and follow the same trail. Good hog hunting dogs rarely chase deer, rabbits, or other non-target species. Unlike many hunting dog varieties, most hog hunting dogs are "silent on the track"; meaning they do not bark until the pursued hog is at bay. Hogs bay (stop running) to get into a

defensive position against the dogs. Hogs may bay as soon as they encounter the dogs, but usually they run from the dogs for some distance before stopping. How far a hog travels before it bays is affected by its gender, age, size, former experience with dogs, aggressiveness of the dogs, terrain type, along with other factors.

Routes taken by hogs and where they bay is captured on a handheld GPS unit from signals received from the tracking collars. These devices can typically locate a dog's collar from three to seven miles depending on vegetation and topography. When a hog is bayed and the dogs stay in the same spot for several minutes the handheld GPS will indicate the event and location. The dog handler then approaches the bayed hog on foot, ATV, horse, or whatever means of transportation they have at their disposal. A bayed hog will often take a defensive position with its back against a protective object such as a tree, body of water, rock, thick vegetation, or anything else that protects its hind quarters from the dogs. The dogs will lunge at and antagonize the hog by barking and nipping.



Wildlife Disease Biologist Clint Turnage collecting samples from a feral hog while dog handler Steve Ratcliff observes

Experienced hunters will approach the bayed hog from downwind if possible. This approach is effective provided the hog does not "break bay" and starts running again. A remedy to keep hogs from breaking bay is to utilize catch dogs. Handlers typically

release a catch dog when they get relatively close to the bayed hog. These dogs catch the hog (usually by the ear), holding it until dispatched by the hunter. Catch dogs are used by many, but not all handlers.

The greatest advantage of using dogs for disease surveillance is sampling efficiency. There are all types of tools and techniques available to a biologist trying to collect samples from feral hogs but few can equal the short-term efficiency that hog dogs provide. Dogs enable the biologist to collect samples from hogs that are difficult to trap. Feral swine may be hard to trap because of trap shyness, abundance of natural food making them less susceptible to baiting, low hog densities, poor land accessibility to move traps, and numerous other reasons. Trap-shy hogs are often the more mature hogs that are the best specimens to sample for disease surveillance. Trapping also is very labor-intensive. The trapper will usually scout the area, pre-bait, establish a trap, bait hogs into the trap with the gate tied open, and eventually set the trap. This process might take weeks before the trap trigger is ever set. If successful, the effort can result in the capture of large numbers of hogs. Although pre-

(Continued on page 8)

TULAREMIA SURVEILLANCE IN NEW ORLEANS

By Scott Woodruff

Tularemia is a serious disease caused by the bacterium *Francisella tularensis*, which can infect humans, wildlife, and domestic animals. Lagomorphs and rodents are the species most commonly infected by the disease. Infected aquatic rodents such as nutria (*Myocaster coypus*) and beaver (*Castor Canadensis*) often contaminate water sources. Transmission of the disease to humans can occur through the bite of an infected tick, deerfly, or other insect, handling infected animals or carcasses, eating or drinking contaminated food or water, and inhalation of contaminated dusts or aerosols. During 2005, NWDP in partnership with the Centers for Disease Control and Prevention, initiated a nationally coordinated surveillance program to monitor wildlife for exposure to tularemia bacteria. In Louisiana, samples for tularemia surveillance are opportunistically collected from targeted



Wildlife Disease Biologist Scott Woodruff collecting samples from a nutria

animals removed during normal damage management operations. Samples from coyotes (*Canis latrans*), raccoons (*Procyon lotor*), feral swine (*Sus scrofa*), red fox (*Vulpes vulpes*), bobcat (*Lynx rufus*), and skunks (*Mephitis* species) have been collected in rural areas through this approach. Collecting samples from urban environments is of particular interest because of the close proximity of wildlife species to people and their pets.

The city of New Orleans has over 300 miles of drainage canals and levees, making ideal habitat for invasive nutria. Nutria can inflict damage to levees and canals by removing vegetation and burrowing, which can lead to erosion and collapsing of levees. Jefferson Parish attempted to trap and remove nutria to minimize risk to the levees; however, trappers were unsuccessful

in removing enough of the animals to afford protection. The decision to collect samples from nutria was based on several factors including: proximity of nutria to people and pets, people hand feeding nutria, and potential transmission by ticks and mosquitos. While preparing for collection operations, several constraints became evident. First, New Orleans is designated as a wildlife sanctuary city, meaning that wildlife cannot be harassed or killed without appropriate permits from the state and city; a process that generally requires a year to complete. Secondly, placing live traps along the canals may involve difficulties, such as persons tampering with or removing traps or releasing captured animals, along with potential for Wildlife Services personnel to encounter confrontations. The extensive distance that would need to be traveled daily to check traps also was a concern. Therefore, an alternative method for obtaining samples needed to be identified.

Recognizing that these constraints would minimize the success of a trapping operation, the New Orleans City Council decided to allow snipers from the Jefferson Parish

(Continued on page 8)

TOXOPLASMOSIS SURVEILLANCE IN FERAL CATS

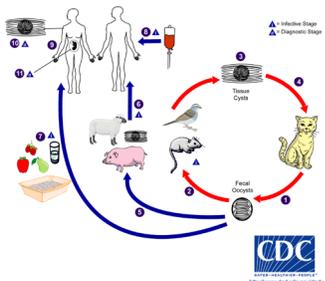
By Adam Randall

Toxoplasmosis is a zoonotic parasitic infection caused by the protozoan parasite, *Toxoplasma gondii*. Felines, particularly domestic cats (*Felis catus*) serve as the definitive hosts responsible for the spread and maintenance of *T. gondii*. The parasite reproduces in an infected cat's digestive tract and oocysts are excreted in feces. After 1-5 days in the environment, the oocysts become infective. Transmission to other cats, and to intermediate hosts (birds and other mammals) occurs when these oocysts are ingested. When this occurs in cats the cycle is repeated. However, when an intermediate host ingests infective oocysts, the organism localizes to neural and muscle tissue, forming cysts that can result in associated disease symptoms. Cats and intermediate hosts also become infected by consuming animals infected with these tissue cysts. When this occurs, tissue cysts will again form in intermediate hosts, but not in cats; cats infected through consumption of *T. gondii* tissue cysts will only yield production of oocysts in

the intestinal tract. People can be infected primarily through consumption of undercooked meat containing tissue cysts, food or water containing contaminated cat feces, or environmental particles such as fecal contaminated soil or litter box substrate. Other routes of transmission in people include blood transfusion, organ transplant, and transplacentally from mother to fetus.

Symptoms of toxoplasmosis in otherwise healthy people can vary from asymptomatic to flu-like. Acute toxoplasmosis is dangerous to people with compromised immune systems, pregnant women and fetuses.

Little is known about the prevalence of *T. gondii* in feral cats or other mammals, such as white-tailed deer (*Odocoileus virginianus*). Wildlife Services is working with Agricultural Research Service, to determine the prevalence of *T. gondii* in white-tailed deer and other species. Histopathology is conducted on hearts collected from deer in Pennsylvania and New Jer-



sey to determine presence of the protozoan, and blood is screened for antibodies.

Also, Wildlife Services is estimating the prevalence of *T. gondii* and other parasites in feral cats at two sites in New Jersey. Preliminary results indicate that no oocysts were present in any of the 46 fecal samples collected to date. However, other zoonotic parasites were observed; including round worm, hook worm, and lung worm.

	Toxocara	Hookworm	Lungworm
Site 1 (n = 27)	12 (44%)	1 (4%)	3 (11%)
Site 2 (n = 19)	1 (5%)	3 (16%)	-
Total (n=46)	13 (28%)	4 (9%)	3 (7%)

The lack of *T. gondii* parasites and oocysts in the fecal samples implies that toxoplasmosis is either not present in the feral cats sampled, or the cats are experiencing latent infections and are no longer shedding. Future efforts will target fecal samples from juvenile cats. Juvenile cats, if infected, are likely to be actively shedding parasites as well as have oocysts in their feces.

STATE HIGHLIGHTS

Western Region

ALASKA

Wildlife Disease Biologist David Sinnett assisted the Wildlife Services operational program in Alaska to prepare for a project to chemically immobilizing moose (*Alces alces*) along busy highway corridors and move them to a temporary holding facility. While at the holding facility, moose will be monitored to assess health and tested for disease. Animals deemed healthy will be fitted with a radio collar and transported to locations away from busy roads. Several hundred moose are struck by automobiles every year between Wasilla and Anchorage. Moose are usually injured and often killed in these accidents, which also can result in severe damage to vehicles and human health.



MONTANA

Montana State University in Bozeman hosted a foot-and-mouth disease table-top exercise on November 9, 2011. Wildlife Disease Biologist Gerald Wiscomb participated in the workshop. Other participants in the 4-hour workshop included local, state, and federal government agencies, law enforcement, and private practice veterinarians. Approximately, 40 people were in attendance. This exercise addressed the scenario of a hobby farmer who traveled out of the country for business. A few days after his return he noticed lesions on some of his sheep. Subsequently, foot-and-mouth disease is determined to be the cause, and animal health professionals and managers are called in to control the spread and eradicate the disease. All participants offered their expert opinions and shared experiences related to livestock and wildlife disease outbreaks and emergency response.

NEBRASKA and WYOMING

Wildlife Disease Biologists Dallas Virchow from Nebraska and Mike Pipas from Wyoming collected samples this past December from coyotes (*Canis latrans*) to detect plague, tularemia, and parvovirus. They collaborated with a western Nebraska sponsor of an organized hunt to obtain access to animals taken during the event. Fifty-nine plague and tularemia samples were collected from coyotes in Nebraska (14 counties), Wyoming (2 counties), and Colorado (1 county). Plague and tularemia samples also were collected from a red fox (*Vulpes vulpes*) and a raccoon (*Procyon lotor*) during the activity. Complete necropsies were not possible on most coyotes, so tongue tissue and fecal swabs were collected from about fifty coyotes.

Eastern Region

ALABAMA

During the first two weeks of October, Wildlife disease biologist Wes Gaston participated in the annual Oral Rabies Vaccination bait drops. The bait drops are part of the National Rabies Management Program's quest to quell the westward expansion of rabies. Coated sachets containing vaccine are dropped from a fixed wing King Air. Wes first participated in a bait drop near Greeneville, Tennessee, then moved with the team for another bait drop near Dalton, Georgia. Gaston also participated in a third bait drop in Autauga/Elmore counties, where more than 10 raccoons (*Procyon lotor*) west of the Alabama River barrier have tested positive for rabies. Teams returned in December to areas where bait was dropped to trap raccoons and collect blood samples to determine the effectiveness of the operation.

GEORGIA

Wildlife Disease Biologist Darrell Kavanaugh made the initial deployment of a newly designed corral trap for feral swine (*Sus scrofa*). The trap can be remotely triggered from up to 120 yards using a modified bow-net trigger device or with a trip/root trigger. The targeted swine would not commit to any set feeding pattern regardless of the settings on the automatic feeder. They showed up at all times of the day and night and often would not return for 1 to 3 days. It was decided to use the trip/root trigger and 15 of 17 swine previously photographed were captured. Following the initial capture the camera, trap, and feeder were left in place for another 3 1/2 weeks. No swine were observed in subsequent pictures and the property owner reported no additional damage.



ARKANSAS

Wildlife Disease Biologist Clint Turnage was contacted by Dr. Wade Reaves an epidemiologist with USDA, Veterinary Services concerning a biosecurity breach at a commercial swine facility near the town of Oxford. A feral boar (*Sus scrofa*) was unable to enter the barn but there was snout-to-snout contact between the feral boar and the domestic swine. Veterinary Services requested that Turnage conduct disease surveillance in feral swine around the property and nearby facilities. This event has raised awareness with Veterinary Services and Arkansas Livestock and Poultry Commission of the need to more closely monitor swine facilities classified as commercial operations to ensure they meet biosecurity standards laid out by the Commission. The domestic swine that were exposed to the feral boar are currently under quarantine and undergoing disease testing.

National Wildlife Disease Program

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PHOTO OF THE QUARTER



Wildlife Disease Biologist Wes Gaston participating in a rabies vaccine bait drop

RECENT NWDP PUBLICATIONS

Dubey JP, GV Velmurugan, C Rajendran, MJ Yabsley, NJ Thomas, KB Beckmen, **D Sinnett**, D Ruid, J Hart, PA Fair, WE McFee, V Shearn-Bochsler, OC Kwok, LR Ferreira, S Choudhary, EB Faria, H Zhou, and **TA Felix**, Su C. 2011. [Genetic characterisation of Toxoplasma gondii in wildlife from North America revealed widespread and high prevalence of the fourth clonal type.](#) International Journal of Parasitology 41: 1139-1147.

Knust, BM, **PC Wolf**, and SJ Wells. 2011. [Characterization of the risk of deer-cattle interactions in Minnesota by use of an on-farm environmental assessment tool.](#) American Journal of Veterinary Research 72: 924-931.

(Dogs—Continued from page 5)

baiting is helpful, it is not a requirement when hunting with dogs. A biologist can accompany a land manager familiar with the property and start hunting immediately.

Using dogs to conduct disease surveillance also has its disadvantages. Good hog dogs are hard to come by, and it takes access to a lot of land in order to use them. Unlike trapping, capturing hogs with dogs is usually done one hog at a time. Dogs become tired and are subject to injury. Hogs may be displaced long distances. Dispersal may be an advantage for hog damage management, but for disease surveillance it might make subsequent hunting efforts less productive. Biologist also need to gain the trust of hog dog handlers who often do not like working with people with whom they are unfamiliar.

Hog hunting dogs might not be the “silver bullet” for all feral swine management or disease surveillance needs, but they can be a wonderful resource that is often overlooked.

(Nutria—Continued from page 6)

S.W.A.T. team to perform night removal operations of nutria. During these operations, members of the nutria control team drove along the canals, while spotters watched for nutria using ambient light or spotlights. Snipers used suppressed .22 rifles to lethally remove animals and a crew usually followed behind to pick up dead animals for disposal. Wildlife Services personnel rode along with the S.W.A.T. team and collected samples from freshly killed nutria and tested them for tularemia at the Centers for Disease Control and Prevention.

Since the beginning of the project in 1995 more than 23,000 nutria have been removed. Preliminary results indicate that exposure to tularemia is likely very low.

Wildlife Services has fostered a positive relationship with the Jefferson Parish Sherriff’s office and the S.W.A.T. team. This approach promises to be an ideal method for collecting samples to test for tularemia infected nutria living in New Orleans.