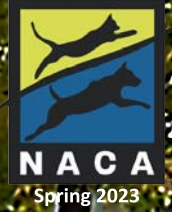


# ANIMAL

## CARE & CONTROL TODAY



A Publication of the National Animal Care and Control Association

### Using DNA in Animal Cruelty Investigations

page 6

### Ten Tips for Forensic Investigation

page 14

### Proving What You Know

page 23

### Building a Solid Abuse Case with the Veterinarian

page 21

UPCOMING TRAINING OPPORTUNITIES  
pg. 30

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## INSIDE THIS ISSUE...

- 3 A Message from Forensic Pathology Professor Adam Stern
- 6 Using DNA in Investigations
- 9 Reviewing the Exigent Circumstance Exception
- 12 Forensic Taphonomy and GPG
- 14 Ten tips for Forensic Examination
- 18 What ACOs Needs to Know About Veterinary Forensic Pathology
- 21 Working with the Vet to Build an Animal Abuse Case
- 23 Proving What You Know
- 25 What's Cooking, ACOs?
- 26 The Intersection of Forensic Science and Veterinary Medicine
- 30 Upcoming Training

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## *Dear Animal Care and Control Colleagues,*

When I was asked to participate in this special issue of *Animal Care & Control Today*, I was both honored and excited to be able to share our knowledge of veterinary forensic science with the readership. As you all know, veterinary forensics is a rapidly growing field, and it is a vital component of any animal cruelty investigation. Crimes against animals need to be investigated at the same level as all other crimes because when the prosecutor takes your case to court, they will need to prove the case to the same level as other crimes ('beyond a reasonable doubt'). It is not enough to say you have a skinny dog in your back yard; therefore, you starved your dog. You need to prove your case and you will be able to do that using veterinary forensic science.

In this issue we will highlight a variety of different specialties that can be used in your cruelty investigations. Authors in this issue span the veterinary, medical, and legal fields. For example, we will cover the veterinary forensic autopsy, introduce you to forensic DNA analysis, and explain how ground penetrating radar can be used in some of your cases. We will also provide an overview of how to work with your forensic veterinarian. Of course, there is a common theme throughout all the articles in this issue: collect and document your evidence. The last thing you need is for your case to fall apart because you didn't have enough evidence.

No matter the size of your organization, whether it is a one person show or you are 100 strong, it is important for you to be prepared for your animal cruelty investigations. I implore all of you to plan ahead and develop your team if you do not already have one. If you have a team, seek out some new training opportunities to refine your skills and/or learn some new investigatory techniques to enhance your investigations. There are a number of great resources available to you that you can utilize to build your team and which can assist you with your investigations, including all of the authors in this issue.

Thank you for all you do, and stay safe!

*Adam W. Stern*  
Professor of Forensic  
Pathology  
University of Florida





# From Our NACA Director



*Dear Fellow Animal Care & Control Family,*

Goodbye, Winter! Hello Spring! Spring is in the air... and in animal welfare that can only mean one thing... KITTENS! With baby season here yet again (And in some regions does it ever really stop?), it's time to be innovative with our programming and creative solutions! The programs being implemented around the country are trailblazing a whole new way for us to do our work – foster ambassador programs, kitten yoga, “baby showers,” and tons of other fun ideas that organizations and agencies are doing, all to support the workload for the spring rush! With the impending blast of babies, it's equally as important to be innovative with your self-care – try a new yoga class, learn to meditate, or simply go for a calming walk. Animal control officers are the definition of “go-go-go,” constantly running from one call to another, rarely getting time to enjoy lunch, or even any real “time off” due to being on call. While the workload is real, and we know you must get it done, having just a few minutes of time to yourself is vital to your success! I challenge you this spring to take a short break under a shady tree and close your eyes, listen to the breeze, and reflect! Think about all the amazing animals and people you help on a daily basis, pat yourself on the back, and take a deep breath – ACOs are the heartbeat and in order to keep the heart pumping, it must be taken care of! Happy spring!

*Jerrica Owen*  
NACA Executive Director



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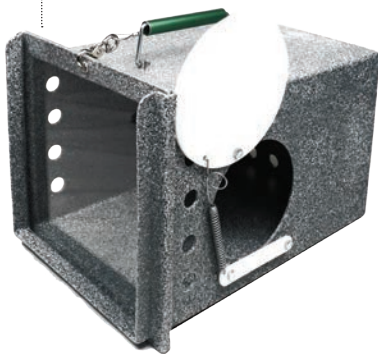
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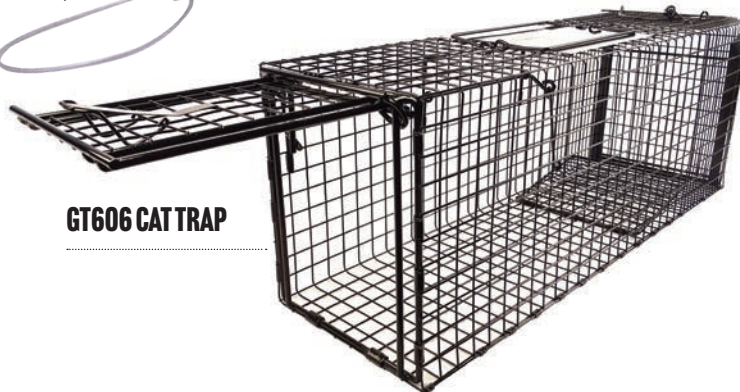
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# Using DNA Analysis in Animal Cruelty Investigations

By AnnMarie Clark and Adam W. Stern

According to CSI shows, deoxyribonucleic acid (DNA) is the gold standard and can be used to solve all the cases. In reality, it can indeed resolve a case, but it is not the be-all and end-all of forensic investigations. DNA results must be only part of an investigation and not the only evidence presented when a case comes to trial. DNA is everywhere and easily accessible. Cells containing DNA are shed in the breath, saliva, when items are touched (also known as touch DNA), and in shed hair. Blood and tissue have a large amount of DNA waiting for analysis. With the modern technology of polymerase chain reactions (PCR), analysis of extracted DNA is relatively easy. More importantly, it is a robust analysis which is consistently repeatable and reliable within and among laboratories and technicians. In other words, everyone gets the same answer when using the same protocols.

What can DNA tell us? It can tell us what species we are dealing with, what gender the animal is, and it can even tell us who that individual animal is by using its genetic profile. This allows the technician to compare the profile of an individual animal to the profile generated from evidence at a crime scene such as blood spatter. The information can place an individual in a specific place and is of great assistance to law enforcement in prosecuting crimes. Because DNA is so readily accessible and analyzed, it is a highly valued part of criminal investigations.

DNA is present in all living individuals, and except for identical twins, the genetic makeup of an individual is unique, whether human or animal. While about 98 percent of human DNA, or DNA within a species, is identical, that 2 percent which is different is significantly different and makes us individuals. Therefore, no two individuals (except twins) have the same genetic profile.

DNA is present in two forms in the cells of the body, mitochondrial DNA (mtDNA) and nuclear DNA. The portion of the DNA that is used for species identification is mtDNA. Mitochondria are extranuclear bodies contained within

the cytoplasm of the cell. There are many mitochondria in every cell and they are involved with cellular respiration and the maintenance of healthy cells. This DNA is a small circular molecule (about 15,000 units) that is very stable, non-recombining, and maternally inherited. Because it is maternally inherited, the mtDNA of an offspring will have the same mtDNA profile as its mother; therefore, it cannot be used for identification of an individual. MtDNA is traditionally used in studies to determine species and populations within species. Because of this there are often large databases that allow our determinations of species to have statistical significance. Ultimately, mtDNA can be used to determine what species is being examined but not determine the individual's identity.

The nucleus of the cell contains the DNA most people are more familiar with. This is the double stranded helical DNA which is organized into chromosomes. Nuclear DNA is unique to each individual unless that individual has a genetically identical twin or triplet. During the production of gametes (eggs and sperm) there is a random swapping of homologous DNA so each egg and each sperm is different from the parent. When the egg and sperm unite to form a zygote, the 50/50 contribution of each parent is readily identified, but the combination of genetic material is unique. The sex chromosomes are part of the nuclear DNA and allow investigators to determine the sex of an animal in the same way human sex is determined. Females have two X chromosomes and males have an X and a Y chromosome. Identification of a Y chromosome indicates the presence of a male individual. Unlike mtDNA, nuclear DNA can be used to identify individuals.

The use of DNA in casework will be demonstrated by the two cases presented here.

## Case 1

The family dog went missing and it was suspected that one of the children in the household was involved in the



dog's disappearance. Animal control officers were called to the scene and were led to a shallow grave where the dog was buried along a tree line. The body was collected as evidence and submitted for a forensic autopsy. The autopsy revealed that the dog had died from at least 18 stab wounds and multiple chop wounds. A search of the child's room revealed a Katana sword in a sheath. When removed from the sheath, there were apparent dried red stains (suspicious for blood) on the blade and sand packed into the windows on the shaft of the blade.

The sword was submitted to the laboratory for analysis (photo, pg. 6). DNA was extracted from swabs taken from the stains on the blade. DNA analysis determined that the blood came from a domestic dog. A genetic profile was generated from the DNA samples used for the species identification. DNA was also extracted from a muscle sample that was taken during the autopsy and a genetic profile was generated. The genetic profiles from the sword and the muscle were compared to each other. The comparisons supported the contention that the blood on the sword was from the deceased dog. The statistic generated states that 1 in  $1.9 \times 10^{+22}$  randomly selected, unrelated dogs would have to be genotyped before finding another dog with the same genotype. The defendant in this case, who was a minor pleaded guilty to aggravated animal cruelty. Adjudication was withheld in this case and the defendant was ordered to pay restitution, receive mental health evaluations and treatment, and was not allowed to have any contact with any animal.

## Case 2

A woman came home to find her dog, a Jack Russel terrier, dead in the garage and noted that the dog's harness had been removed. Her partner, who was released from incarceration the day before, was present and stated that the dog had been hit by a car. However, the woman found blood and what appeared to be several dog teeth in the garage. She called the police and filed a formal complaint. Animal control officers and local police responded and confiscated the woman's partner's clothing, the dog's teeth found in the garage, the dog, and other items that were potentially used to kill the dog. A large



tire iron was submitted as the potential weapon. An autopsy of the dog revealed that the dog had died of blunt force trauma that was inconsistent with vehicular trauma or being hit with a tire iron. The items submitted for DNA examination included the dog teeth, the defendant's clothing, the tire iron, and a muscle sample from the deceased dog. The tire iron was closely examined with magnification, did not have any apparent blood evidence on it, and was therefore, subsequently not included in the DNA assays.

An examination of the defendant's clothing revealed that all the suspect blood stains were on the back of the shirt (Above, black arrows point to the blood stains.), and a very tiny stain on the hem of the shorts he was wearing at the time of the incident. DNA was extracted from one of the teeth, several spots from the back of the shirt, and the shorts. Genetic profiles were generated from each of the items. Once the data was collected, DNA was extracted from the muscle sample from the dog. A genetic profile was generated for the muscle and then all the profiles were compared. The profiles were all identical, indicating that all the evidence was from the deceased dog with a statistically significant finding of 1 in  $1.4 \times 10^{+19}$  dogs that would randomly have the same profile. The injuries of the dog and the

*(continued on page 8)*

(continued from page 7)

blood stains on the back of the shirt support the scenario that the defendant had thrown the dog to the ground and then used the harness to raise the dog over his head and throw him again to the ground. The violence of the action dislodged the already loose teeth which flew across the garage. In this case the defendant pleaded guilty to felony cruelty to animals and was adjudicated guilty animal cruelty and sentenced to six months in jail.

## Conclusion

As previously mentioned, DNA analysis can be used for a variety of reasons, including species identification and identification of an individual. Just like any other aspect of veterinary forensic science, DNA alone will not be able to make your entire case; however, when coupled with other disciplines, such as the forensic autopsy in the cases we reviewed, it can successfully be used to highlight relationships between evidence collected at the scene with the animal victim(s). The next time you are at a crime scene and there is the potential for DNA evidence at the scene, such as a blood stain on the wall of a fighting pit or on a potential weapon, considering collecting a sample. You never know when that DNA sample might just be the final piece of evidence you need to connect the last pieces of the puzzle and lead to successful prosecution of your case.

*Adam W. Stern, DVM, DACVP is a professor of forensic pathology at the University of Florida's College of Veterinary Medicine. He is a board-certified veterinary pathologist and is an American College of Veterinary Pathologists Founding Fellow in Veterinary Forensic Pathology. He specializes in the forensic death investigation of animals and performs forensic autopsies on animals from throughout the country. Dr. Stern has been recognized for his work by multiple professional organizations, including the American College of Veterinary Pathologists and Florida Animal Control Association. He has previously served as the president of the International Veterinary Forensic Sciences Association.*

*AnnMarie Clark, MS, has been a forensic DNA analyst for the University of Florida's Veterinary Forensic Program, Maples Center for Forensic Medicine for eight years. Prior to that she was director of the Genetics Analysis Core Facility for the University of Florida. In that capacity she trained students, faculty, and scientists in laboratory techniques relative to population studies of various species of wildlife. It was during this time that she began developing forensic assay for wildlife law enforcement agencies. She has been analyzing forensic DNA cases and testifying in court for 30 years, and as such has extensive experience with basic DNA extractions, amplifications, and analysis of data. ❖*



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# Reviewing the Exigent Circumstances Exception to the Warrant Requirement

By Kate Youssouf

A good rule of thumb for law enforcement is that if you want to search a person, residence, business, vehicle, or property, and retrieve evidence, get a warrant first. This rule applies to all factions of government law enforcement, including animal control officers. The purpose of the warrant requirement is to ensure that a neutral judicial officer assesses whether a law enforcement officer has probable cause to make an arrest or conduct a search. In general, any search or seizure conducted without prior approval of a judge or magistrate, in which an individual has a reasonable expectation of privacy or liberty interest, is presumptively unreasonable under the Fourth Amendment of the United States Constitution, unless one of the specifically established and well-delineated exceptions to the warrant-requirement applies. Importantly, the burden is on the government to establish that a particular exception to the warrant requirement existed at the time of the search or seizure. In any case, the scope of the search or seizure must be strictly tied to and justified by the circumstances that triggered law-enforcement action.

Exigent circumstances is a well-established exception to the warrant requirement. The exception excuses an otherwise illegal warrantless search or seizure when probable cause exists in the context of an “emergency or dangerous situation,” which may include, but is not necessarily limited to, one of the following: 1) when an officer is in hot pursuit of a fleeing felon; 2) when it is necessary to prevent imminent destruction of evidence; 3) when it is necessary to prevent a suspect’s escape; or 4) when it is in response to a risk of danger to the police or others. In general, courts will look to the totality of circumstances in determining whether an exigency exists. One factor law enforcement should consider in assessing exigency is the gravity of the underlying offense for which an arrest will be made. Whether a fleeing misdemeanor suspect qualifies as an exigent circumstance will turn on the particular facts of the case. In any event, the exigencies of the situation must “make the needs of law enforcement so compelling that the warrantless search is reasonable under the Fourth Amendment” (*Mincey v. Arizona*, 437 U.S. 385, 393-94 (1978)). If law

enforcement agents find themselves confronted with a now-or-never situation, in which seeking a warrant would be impractical, they may be able to rely on an exigent circumstances exception to conduct the search or seizure (*Roadeen v. Kentucky*, 413 U.S. 496, 505 (1973)).

Crucially, a warrantless entry based on exigent circumstances must be supported by a genuine exigency. As such, law enforcement cannot deliberately create the exigency. To justify the warrantless search, law enforcement’s conduct preceding the exigent circumstance must have been objectively reasonable and must not have violated the Fourth Amendment. In other words, the actions taken by law enforcement prior to the search or seizure, must have been lawful for the exigent circumstances exception to apply.

At least 23 states, including California, Colorado, Connecticut, Florida, Georgia, Illinois, Indiana, Kansas, Maryland, Massachusetts, Michigan, Montana, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, South Dakota, Texas, Vermont, Virginia, Washington, Wisconsin, and the District of Columbia have applied the exigent circumstances exception to cases of suspected animal cruelty. For instance, in *People v. Keith*, 185 Cal. App. 4th 247 (Cal. Ct. App. 2010), a California appellate court held that the officers’ warrantless entry of a defendant’s residence was justified under the exigent circumstances exception because the officers reasonably believed that immediate entry was necessary to aid a dog that was being mistreated. The officers had received a phone call from a neighbor of the defendant who said that she heard a dog’s high-pitched crying in the unit above hers and had heard similar sounds in the past. The officers arrived on scene to investigate the complaint and when the defendant opened the door, the officers could hear the faint sound of a dog whimpering inside the defendant’s residence. The defendant told the officers that he did not own any dogs and refused to allow the officers to enter. However, believing that there was an animal in distress, the officers entered without a warrant, and subsequently found an injured dog on the patio and a dead dog in the freezer. Both dogs had suffered head trauma. The trial

*(continued on page 10)*

(continued from page 9)

court denied the defendant's motion to suppress the evidence, and on appeal the appellate court affirmed holding that exigent circumstances justified the officers' warrantless entry because they reasonably believed they needed to aid a live animal in distress due to human-caused injury or maltreatment.

In *Tuck v. United States*, 477 A.2d 1115 (D.C. 1984), a D.C. appellate court held that the officers' warrantless entry of a pet store and seizure of a rabbit was justified by the exigent circumstances exception after the officers observed the animal to be semi-dazed, panting, covered in heavy salivation and suffering from heat in an unventilated display window. In *State v. Bauer*, 379 N.W.2d 895, 898-99 (Wis. Ct. App. 1985), a Wisconsin appellate court held that the need to stop the ongoing suffering of horses in a barn merited exigency and justified law enforcement's warrantless search of the barn and seizure of the horses. And in *State v. Fessenden*, 355 Or. App. 759, 771-76 (Or. 2014), an Oregon appellate court upheld the warrantless seizure of a horse under the exigent circumstances exception because the horse was emaciated and law enforcement had probable cause to believe the defendants had committed animal neglect (Photo at right: note the emaciated condition of the horse on the day of seizure and improved condition 60 days post seizure).

Significantly, courts are critical of whether the exigency was created by harmful human conduct and may not apply the exigent circumstances exception to cases in which a distressed animal has gotten into difficulty on its own. For instance, in *Suss v. American Society for Prevention of Cruelty to Animals*, 823 F. Supp. 181 (S.D.N.Y.1993), the court found that the exigent circumstances exception did not apply, after ASPCA agents had



enlisted the assistance of firefighters to break through the walls of a commercial building to rescue a cat that had gotten trapped between the walls of two buildings.

In other cases, the exigent circumstances exception may be used in-tandem with other exceptions to the warrant requirement. For instance, in *State v. Archer*, 259 So.3d 999, 1005 (5th Fla. Dist. Ct. App., 2018), a Florida appellate court held that a warrantless search or seizure based on exigency must be limited in scope to its purpose, and is no longer justified once the exigency ends, unless law enforcement is returning to seize incriminating evidence that was in plain view during the exigency. In that case, the warrantless seizure is justifiable under the plain-view exception to the warrant.

In *Archer*, law enforcement had responded to a call in which the caller described hearing sounds of a dog

yelping and being beaten at the defendant's residence. An officer who arrived at the defendant's residence heard dog commands and sounds of striking of flesh. Thereafter, the officer knocked on the defendant's door and told the defendant that he was there to investigate a complaint of animal abuse. The defendant told police that he had disciplined by hitting him a few times for biting him and making a mess. The officer told the defendant that the officer had probable cause to enter the house imminently or that he could seek a warrant.

Ultimately, the defendant led the officer to the rear of the house and pointed toward the dog who was tied up against a fence in a corner, was bloodied and laying down with his tongue hanging out. The officer determined that the dog was dead and arrested the defendant on animal cruelty charges.

After securing the defendant in the police car, the officer re-entered the defendant's home and yard to take pictures of the crime scene and secure the dog's body. At a suppression hearing, the officer testified that his warrantless entry of the defendant's residence was necessary in light of what he had already seen and heard, and that obtaining a warrant at that time of day would not have been feasible. The trial court determined that the urgent and immediate need to check on the safety and well-being of the dog and connect the feared emergency to the house that the officer entered constituted an exigency that justified the initial warrantless entry. On appeal, the appellate court affirmed the trial court's decision and also determined that the officer's warrantless re-entry of the defendant's property to photograph and seize the dog's remains was lawful under the plain-view exception because the officer was in a position where he has a legitimate right to be, the incriminating character of the evidence was immediately apparent, and the has a lawful right of access to it.

Differences across jurisdictions may sometimes create confusion about what procedures law enforcement, including animal control officers, must follow during the search of a property and seizure of an animal in suspected animal cruelty cases.

Where this happens, rescue operations may be delayed because officers may feel uncertain as to whether the situation constitutes an exigency that permits a warrantless search or seizure. It is important to connect with your local prosecutor and/or other law

enforcement officers to find out whether the exigent circumstances exception has been applied to animal cruelty cases in your jurisdiction.

The case examples provided in this article describe some of the circumstances in which an exigent circumstances exception has been available and the specific facts that officers look for to determine whether an exigency exists. In any case, whether the exception applies will depend heavily on whether the cause of the animal's distress is due to human conduct—which may give rise to probable cause—and on the level of urgency created by the specific facts and circumstances of the situation at hand. Where the exigency is created by human conduct and an emergency exists, the exception may be available to law enforcement, including animal control officers, as permission to act to help save an animal's life, stop the animal's suffering, or prevent the imminent destruction of animal cruelty evidence.

*Kate Youssouf is a staff attorney with the Criminal Justice Program at Animal Legal Defense Fund. She has a J.D. from American University's Washington College of Law and is a member of the District of Columbia Bar. As a staff attorney, Kate addresses crimes against animals through amicus briefs, trial-level cruelty case support, and collaboration with veterinarian and mental health professionals across the country to resolve the impetus and impact of animal cruelty. ❖*

  
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# Forensic Taphonomy and Ground Penetrating Radar (GPR) in Forensic Casework

By Lerah Sutton

Popular television shows such as *CSI*, *Law and Order*, *Forensic Files*, and many of the other numerous similarly themed shows have helped to populate the term “forensic science” as a household word. Consequently, most people have a baseline understanding of the term and use it synonymously with crime scene investigation. In reality, forensic science is far more in-depth and nuanced than most people initially realize. The more correct phrase is “the forensic sciences” which refers to the application of any field of science to legal proceedings, particularly those related to criminal matters. This includes cases of animal cruelty, abuse, and neglect. Common fields of study include forensic anthropology wherein a practitioner studies bones, forensic pathology that assesses the study of diseases and disease processes, forensic entomology that studies insects and their arthropod relatives, and many other subspecialties. Almost any field of science or study can have a forensic application if it can be applied to a legal matter!

One particularly unique subspecialty within the forensic sciences is forensic taphonomy. This is likely a more unfamiliar phrase and area of study. It isn't a widely popular field of science. In fact, forensic taphonomy itself isn't necessarily its own entire field of study. Instead, it's a subfield often practiced by forensic anthropologists and it falls under ecology. It focuses on the processes of decomposition – often within the context of a clandestine gravesite – and the symbiotic relationship of the process of decomposition and the environment in which the decomposition is occurring.

The basic concept of forensic taphonomy is that the processes of decomposition will affect the surrounding environment in which remains are decomposing. Conversely and symbiotically, the environment itself will affect the decomposition processes. The relationship between the environment and decomposition can provide critical information for investigators related to the circumstances around the time of death and the time between deposition of the body into



said environment and the discovery of it by investigators.

This is particularly important if a body has been buried in a clandestine grave, for example when looking for buried remains on a property suspected to have housed fighting dogs. Investigators will need to utilize environmental clues and changes to help locate the grave. In cases of clandestine gravesite burials, the use of a ground penetrating radar (GPR) can be a critical component of successfully locating the gravesite. The use of a GPR can provide real-time indications related to the location of a clandestine gravesite (photo pg. 12). Many investigators think of a ground penetrating radar as a type of presumptive test for gravesite location. This would be similar to a presumptive test used to determine if a reddish-brown stain is actually blood before taking the next steps in collection and analysis. The GPR can be used as a presumptive test of sorts to determine if an area that looks like it might be a gravesite actually is before engaging in a full-scale excavation, which can be a time consuming and resource-intensive process.

Often, investigators searching for a clandestine gravesite are operating based on vague and unreliable information from witnesses or informants. These tips may include information such as, "I think there might be a body buried somewhere out in the field behind the old high school." While this information does indeed provide a good starting point for further searches, it isn't realistic to attempt to excavate an entire field in search of a gravesite. This is where the use

of a GPR becomes critical to an investigation. A GPR operator with sufficient training of the unique characteristics of the local environment can conduct a search to help determine if the area in question is likely to contain a clandestine grave. Within said search, the operator can help identify more localized areas of interest that may necessitate a more thorough search. Unlike what popular forensic shows have depicted as the function of GPR, it doesn't operate as an underground x-ray machine, nor does it provide a clear picture of sub-surface contents. Instead, it indicates anomalies, that is, differences in density between the surrounding soil and items that may be buried beneath the surface which may be of forensic significance. These anomalies shown on a GPR screen in real time could be a body, a weapon, or other items of evidence. However, they could also be unrelated to the scene such as tree roots, blocks of concrete, or other debris. Once a GPR search has identified an area of anomaly, investigators can dig test pits in areas of interest to determine what may be the cause of the anomalies depicted on the GPR screen and whether or not they are of evidentiary value. The photo below shows a forensic investigator digging a test pit in an area of interest indicated by a GPR search. If a test pit provides positive results, then a full-scale excavation would be necessary. If a test pit shows that the anomaly was related to something of non-evidentiary value, then tremendous time and resources can be saved by allowing investigators to better target searches in areas that are

most likely to provide promising results for use within their investigations. So remember the next time you are looking for a clandestine grave, consider contacting an expert in GPR to assist you with your search.

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# Ten Tips for a Great Forensic Examination

By Maria A. Serrano and Adam W. Stern

Veterinarians are important members of the team of professionals who need to work together to collect and document evidence that will be used to establish whether or not animal cruelty, abuse, or neglect has occurred in a particular case. When there are live animal victims, the forensic medical evaluation (also called the forensic live animal examination) is a fundamental component of an animal cruelty investigation. The following steps will aid the veterinary team in assessing and documenting animal cruelty thoroughly and confidently.

## 1. Examine and document the scene as thoroughly and detailed as possible

The animal cruelty investigation begins at the crime scene, and in order to process a scene adequately, it is imperative to recognize, collect, and preserve the evidence in a methodical manner. Ideally, a veterinarian will respond to the crime scene along with investiga-

tors; however, this is not the norm. When this occurs, the veterinarian will fulfill a unique role of assisting with the identification, collection, and possible examination of animal-related evidence. Examination of evidence (in this case the live animal) can include triaging animals at the scene or examining them at the veterinary clinic. The veterinarian's opinion is considered that of an expert and will often be decisive in determining if an animal has been abused or neglected. When the veterinarian is not present at the scene, they will need to rely on the evidence collected by investigators to make accurate determinations regarding the case. For example, could the weapon collected at the scene have caused the observed injuries on the animal.

When responding to a crime scene, it is important for investigators to consider Locard's Exchange Principle that "every contact leaves a trace" and pay great attention to detail to avoid overlooking important evidence. Investigators should interview all witnesses and be proficient



in taking relevant histories. The use of sketches, maps, photographs, video, and detailed notes will be invaluable to support and document the findings and will be invaluable when reconstructing the events as well as when testifying in court.

## 2. Examine the animals as soon as possible

Animals that are part of a cruelty investigation are considered evidence; however, they are unique because they are living beings. Some of the evidence we can collect from them is transient and should be collected and documented as soon as possible in the investigation. All the evidence and initial documentation of the animal(s) should be done prior to any medical intervention in order not to alter or contaminate the evidence. This includes collection of samples such as blood, feces, skin scrapings, and other diagnostic samples as well as evaluation of hydration, thirst, hunger, temperature (especially in cases of hypo or hyperthermia), body condition score (BCS), weight, behavior, and pain. The exception to this general rule is when the animal's life is at risk.

Remember that due to the fact that these animal victims are alive, they can change with time. Documentation of the progress the animal makes while undergoing treatment can be very telling, especially in cases of neglect. For example, due to the potential voracious appetite of a dog suspected to have been starved, when being fed for the first time it is imperative that the veterinarian obtain a video of this event to show how this dog had an

appetite and was willing to eat the food being provided. Additionally, the use of a weight chart indicating the percentage of body weight gain as care is being provided will provide compelling evidence in court.

It is important to point out that because animals are considered property in a legal context, veterinarians must have the legal authority to examine and process samples obtained from the animal by its legal owner.

## 3. Ancillary tests and diagnostics

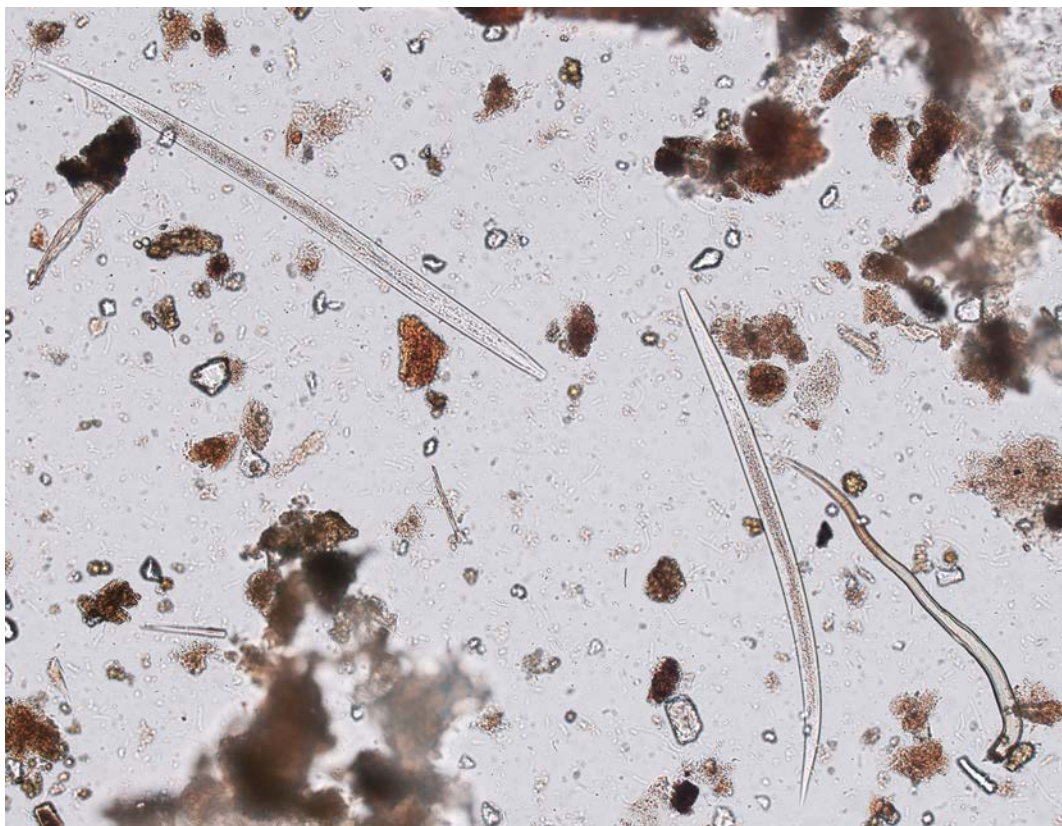
Diagnostic tests will provide a baseline of the condition of the animal and help determine the presence of any underlying disease(s) that may explain the condition of the victim. Additionally, these diagnostic tests can confirm, refine, or refute the forensic medical examination findings on presentation. Not all patients will need all diagnostic tests; however, depending on the clinical signs noted, certain diagnostics will be confirmatory such as parvovirus testing in a puppy or kitten with hemorrhagic gastroenteritis. Examples of diagnostic tests include bloodwork (CBC, serum chemistry), fecal analysis (photo below: hookworm larvae from a dog), radiographs, ultrasound, and a biopsy to name a few.

Victims of animal abuse and neglect can have indications of some conditions reflected in laboratory findings. This includes a stress leukogram (neutrophilia, lymphopenia, monocytosis, and eosinopenia), inflammation (neutrophilia), dehydration (azotemia, elevated electrolytes, and elevated total protein), infection (neutrophilia with left shift), or starvation (hypoproteinemia). Animals whose history suggest abuse should have full body radiographs to rule out fractures in different stages of healing.

## 4. An image is worth a thousand words

Photography and videography can be extremely helpful in preserving evidence to present in court, as well as for the veterinarian to remember the details of the findings at the time of examination of the animal. Details such as the BCS, condition of the coat, and other transient evidence such as hydration and injuries will be eternalized in photog-

*(continued on page 16)*



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raphy/videography. Forensic photography during the forensic medical examination will also aid in identifying the animal(s) as well as showing the degree and relationship of the injuries present on the victim.

It is important to remember that intake photographs of each animal need to be taken in every case. This series of photographs include seven (7) views of the animal: frontal (with and without a photo board), caudal, left lateral, right lateral, ventral and dorsal views (photo: pg. 17, lateral photograph of an emaciated dog). The frontal view with a photo board that contains relevant case information (such as case number, date/time of the examination, name of the photographer, and agency) should be the first photograph in this series of photos.

Additional photographs can be taken as needed and can include any photographs detailing any injuries or abnormalities such as matting and soling of the coat, embedded nails or bruising patterns (photo pg. 16: photograph of wounds present on a puppy whose muzzle was taped repetitively).

Remember, negative photographs showing a lack of abnormalities are just as important as photographs that show abnormalities. Ultimately, these photographs will not only ensure the animal presented in fact is the victim being evaluated and treated, but also proves that the lesions existed and can be used to show the court the injuries and extent of the animals' condition upon presentation as well as its progress during and after treatment.

There are a number of different types of cameras on the market. In order to document animal cruelty cases, it is best to use a digital single-lens reflex camera or a mirrorless camera. The operator must be familiar with the camera and ensuring proper lighting is used. Perspective is very important when photographing injuries. A series of photographs starting with the entire animal (global view) and subsequent closer views (midrange and close-up) are imperative. When the size of the injury is important, the use of scales, calipers, and rulers should be utilized. Original and unaltered photographs need to be securely stored, and upon request (via a subpoena) must be made available to the prosecution and/or defense. Remember the use of a personal phone cameras is not recommended to take photographs for your investigations.

## 5. Minimize stress to victims

Animals who have experienced abuse may be fearful and may resort to nipping and biting during a forensic medical examination or during diagnostic testing. Using fear free techniques and low stress handling will avoid further trauma to these animal victims. Since quiet areas are not too common in shelters, identification of a calm area where the victim can decompress will also be helpful when evaluating the animal's behavior.

Animals who continue displaying signs of fear or behavioral distress should be sedated prior to performing diagnostic testing and treatments performed simultaneously in order to reduce handling while the animal is aware and building anxiety. Multiple sedation protocols are available for cats and dogs. For example, a cocktail including an opioid (such as Hydromorphone or Butorphanol) and Dexmedetomidine provides sufficient sedation to allow diagnostics testing and provides analgesia in injured patients. These cases should be prioritized to be placed in a foster home for the duration of the investigation to avoid behavioral deterioration in the shelter environment.

## 6. Follow proper chain of custody

Chain of custody is the documentation that ensures that the evidence collected at the scene is the same presented in court. Anything collected from the animal or the scene will be considered evidence: photographs, video, swabs, radiographs, and even the animal itself. All evidence (including the animal) should be included in the chain of custody documentation. The purpose of chain of custody is to track the movement of evidence through its collection, safeguarding, and analysis by documenting each person who handled the evidence, the date and time it was collected or transferred, and the purpose of that transfer. All evidence should be collected, packed, labeled, and logged in a methodical manner. All evidence must be stored in a secure location. All people who participate in the chain of custody of evidence may be subjected to a subpoena to appear in court.

## 7. Use protocols, checklists, templates and diagrams

An animal cruelty investigation has multiple aspects that require a thorough and systematic approach. The use of protocols and checklists will ensure that the scene and the victim are handled in a uniform way and that samples taken by multiple team members follow the same process. Using checklists will minimize human error and ensure nothing is forgotten and/or missed. Using form templates will help the veterinarian follow a methodical approach throughout the investigation whether it is at the time of forensic autopsy or during the forensic medical examination. Additionally, templates save time and promote efficiency, without compromising detail.

Diagrams are illustrations made by the observer that will help put the evidence in perspective with the scene or the animal. Diagrams may include any item or injury found on scene such as maps, blood splatter, bite injuries, burn patterns, or projectile injuries. Diagrams may be helpful for the court to better understand the case.





## 8. Special considerations for special victims

Victims of abuse or neglect will have different needs based on the circumstances surrounding each case. Some cases will greatly benefit from a home environment to reduce stress and psychological trauma; others will benefit from socializing with other animals or training sessions to reverse undesired behaviors. Injured animals should always be treated to alleviate pain. These patients should be re-evaluated regularly to ensure their analgesic needs are met throughout the recovery process. Starved animals will require a strict re-feeding schedule to avoid refeeding syndrome, with a balanced diet that is adequate for the species and stage of each individual patient. Weight charts will be crucial in showing the animal's progress in recovering.

## 9. Technology is your friend

Today, there are multiple software and technologies that will help you store and share information securely. All evidence must be kept confidential, and efforts should be made to ensure the information gathered in each case is stored properly; however, the use of technology will allow for documents to be available in an efficient manner with all parties involved not only during the investigation but during

trial. It is important to point out that during an on-going investigation, all records related to the case are generally not subject to public records requests.

## 10. You are not alone

Veterinarians are considered experts due to our training and experience in animal medicine and welfare; however, it is very important not to be afraid to recognize there are other veterinarians with further specialties and experience in veterinary forensic medicine who are glad and willing to help you as needed during these cases. The University of Florida Veterinary Forensic Sciences Laboratory and the Maples Center for Forensic Medicine, the Animal Legal Defense Fund, and the Humane Society of the United States are examples of organizations that are available to guide and support other organizations responding to animal cruelty and neglect cases. There are also forensic entomologists, forensic radiologists, and forensic photographers who will be available for consulting, and their input will add strength to your case. Visiting your local medical examiner's office will also be helpful in learning techniques used in the human field that may help your training and experience for future veterinary forensic cases. ❖

# The Veterinary Forensic Pathologist: What the ACO Needs to Know

By Adam W. Stern and Courtney Valerio

**V**eterinary forensic science is the application of any field of science to animal-related legal proceedings through the observation and interpretation of physical evidence including the animal. Fields of science that can be applied to animal cases include veterinary medicine and pathology, entomology, toxicology, botany, and genetics, to name a few. Veterinary forensic pathology specifically focuses on determining the cause of death by examining a deceased animal. The forensic postmortem examination of the animal can also be called a forensic necropsy or forensic autopsy. While some veterinarians will perform a forensic autopsy, the veterinary forensic pathologist is ideally situated to perform this examination due to the rigorous training they have undertaken, achievement of board certification in veterinary pathology, and having obtained Fellow status in veterinary forensic pathology. In addition to the forensic autopsy, the veterinary forensic pathologist

will document the autopsy findings with a report and photographs, will collect evidence from the body, and will be involved with court proceedings, including depositions and trial testimony. It is important for the animal control officer (ACO) or law enforcement officer to be aware of how veterinarians, specifically the veterinary forensic pathologist, can provide valuable scientifically credible information to assist with the animal cruelty investigation.

The forensic autopsy is performed to determine the cause of death of an animal or in some instances the reason for euthanasia of the animal. It should be performed whenever there is a deceased animal encountered in an animal cruelty investigation, even if the case appears to be a "slam dunk." The forensic autopsy is an integral part of an animal cruelty investigation, and the results will prove that the lesions existed. The veterinary forensic pathologist will be able to make a formal cause of death



determination, similar to the medical examiner/coroner investigating a human fatality. Finally, the veterinary forensic pathologist will testify in court about the examination findings as well as how the lesions/injuries occurred and if the animal experienced pain and/or suffering.

When presented with a deceased animal, the main question the veterinary forensic pathologist will answer is what is the cause of death or injury. Simply put, the cause of death is the injury, disease, or the combination of the two that results in physiologic derangement and death of the animal.

It is important for the ACO to understand what the forensic autopsy is and the following are the highlights of the process: The autopsy is divided into two parts: the external examination and the internal examination. The external examination includes identification of unique markings and tattoos, assessing the nutritional and body condition of the animal, the presence or absence of any external parasites, and looking for any lesions on the body. For example, in the photo at left, the veterinary forensic pathologist is measuring the size of a gunshot injury on the head of a dog. The internal examination includes evaluation of the subcutis (tissue beneath the skin), body cavities, and internal organs. During all parts of the autopsy, the veterinary forensic pathologist will document findings, take photographs, and collect tissues to place them in formalin (to halt decomposition) or freeze them. The tissues that are collected in formalin will be examined under the microscope (histopathology). There are numerous ancillary techniques that can be used to further work up a forensic case in conjunction with the forensic postmortem examination including radiography, entomology, toxicology, serology, and histopathology.

Now that we have reviewed the role of the veterinary forensic pathologist, the forensic autopsy, and some of the ancillary tests that can be performed, let us look at a successful animal cruelty investigation involving the ACO and veterinary forensic pathologist.

## Case example

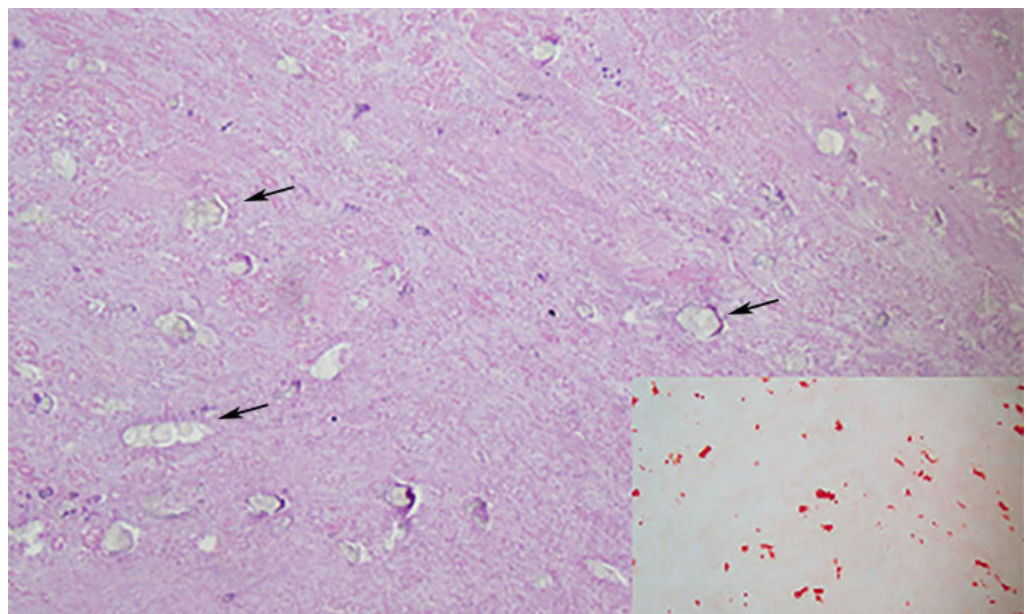
In 2021, an ACO was dispatched to a home at the request of the local police department. A resident contacted law enforcement due to the fact that three dogs had abruptly gone missing from a backyard. Once at the scene, the ACO talked to the resident who stated that he did not own any dogs. He gave consent to the ACO to search his backyard, and during the search, the ACO iden-

tified evidence that dogs had been on the property, including dog collars, chains, and bowls. There was evidence of recent disturbance to ground in one area of the yard along with a foul odor. Further investigation determined that this was a burial site and three severely decomposed dogs were exhumed from the site. The ACO wanted to know the cause of death of these three dogs; therefore, requested a forensic autopsy be performed on all three dogs at the University of Florida College of Veterinary Medicine (UFCVM).

At the UFCVM, postmortem CT scans, forensics autopsies, and microscopic examination of tissues were performed on all three dogs. The dogs were markedly decomposed (as they had been buried for over three weeks) and many of the organs could not be identified. The key to this investigation was the microscopic examination of the remnant kidney tissue where innumerable translucent crystals were observed consistent with calcium oxalate crystals. These crystals are seen in the kidney (photo below) and are denoted by the black arrows. Additionally, within the inset of the photo there is red staining of the crystals using a special stain (Alizarin Red S) which was used to confirm that these were calcium oxalate crystals. The accumulation of these crystals within the kidneys was caused by ethylene glycol poisoning (ingestion of antifreeze). Even in these extremely decomposed dog remains, the cause of death was able to be determined.

This case illustrates how the ACO had asked an important question: "How did these dogs die?" which was vital to the case. In this case, the forensic autopsies allowed for the determination of the cause of death, but also provided information about the suffering all three of these dogs endured as they experienced the toxic effects from the ingested antifreeze. The resident, now determined to be the owner of the dogs was charged with three felony counts of animal cruelty. As a result of the ACO's investigation and

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involvement of a veterinary forensic pathologist, the defendant pleaded guilty to the charges and was sentenced to five years incarceration, ordered to pay restitution, and received a no contact with animals upon release from prison.

## Conclusions

A successfully executed animal death investigation involves the incorporation of multiple individuals serving a variety of roles both from within your agency and outside of your agency. While we are highlighting the partnership between ACOs and a veterinary forensic pathologist, this is just one example of how a successful partnership can assist you with your investigations. The public recognizes that animal abuse is unacceptable and rely on all of us to investigate crimes against animals.

However, the jury also wants to see that a complete and thorough investigation was performed similar to non-animal crimes. Therefore, it is imperative that you have a team in place so that you can meet this demand and do the best job possible. Finally, it is best to prepare for the investigation of animal crimes before it occurs. If you do not have existing partnerships to help during these investigations, start developing them now and be

sure you include a veterinary forensic pathologist on your team.

*Adam W. Stern, DVM, DACVP is a professor of Forensic Pathology at the University of Florida's College of Veterinary Medicine. He is a board-certified veterinary pathologist and is an American College of Veterinary Pathologists founding fellow in veterinary forensic pathology. He specializes in the forensic death investigation of animals and performs forensic autopsies on animals throughout the country. Dr. Stern has been recognized for his work by multiple professional organizations including the American College of Veterinary Pathologists and Florida Animal Control Association. He has previously served as the president of the International Veterinary Forensic Sciences Association.*

*Courtney Valerio, BVMS, MRCVS is a veterinary anatomic pathologist undergoing a Fellowship in Veterinary Forensic Pathology at the University of Florida College of Veterinary Medicine. She performs forensic autopsies for the Veterinary Forensic Pathology Service and her current research involves the use of barbiturate screening tests and alternate matrices collected postmortem. Dr. Valerio also gives lectures to both veterinary students and veterinarians on topics in veterinary forensic pathology. ❖*

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# Working with the Veterinarian to Build an Animal Abuse Case

By Jennifer Woolf

Oftentimes, the first people to become aware of potential animal abuse are veterinarians and animal control officers. Veterinarians may have the animal presented to them by a person who has either abused the animal, knows who abused the animal, or has no idea the animal is being abused. The veterinarian may then contact their local animal control to report the suspected abuse. Alternatively, an animal control officer (ACO) may be the first person to become aware of potential abuse when working in the field or receiving animals over the counter. The officer may then bring the animal to a veterinarian for an examination, whether that be for a live animal (clinical forensic examination) or a deceased animal (postmortem examination, necropsy, or autopsy). Regardless of what route is used, animal control officers and veterinarians need to work together to build a case of animal abuse. With that in mind, from the veterinarian's point of view, what can an officer do to help with the case?

Any case of suspected animal abuse begins at the scene of the crime. In most cases, veterinarians are not on-scene. Therefore, the ACO becomes the eyes and ears (and sometimes nose) for the veterinarian. The more information an officer can document on the scene, the more help that can be for the veterinarian. In all cases of animal abuse, it is the totality of the evidence – scene photos and videos, witness statements, law enforcement reports, etc. – that determine the likelihood of animal abuse. The examination and any testing performed by the veterinarian such as radiographs (x-rays) and blood tests help to support the case, but rarely can the veterinary findings alone make the case.

For example, if I examine an animal and find a skull fracture to be the cause of death, it is the information provided by the ACO that determines if that fracture was due to accident (He says he dropped the kitten.) or abuse (She says he threw the kitten to the ground.). The more information that can be provided from the scene, the greater the possibility that I can determine which story is true. Questions the ACO might ask include, was the floor hard like concrete or soft like carpet? Was the alleged abuser sitting or standing when the kitten was dropped/thrown? Had this kitten been examined by a veterinarian previous to

*(continued on page 22)*



(continued from page 21)

this incident and if so, what were those findings? Have any other pets in the home been injured or killed? Is there a concern for child abuse or domestic violence involving the suspect? The answers to these questions can help to determine which story is the more likely cause of the skull fracture, accident or abuse.

Examples of types of evidence the officer may come across at the scene can include:

- Physical objects such as a bloody knife, a treadmill, or a noose
- Sights such as a bare circle in the grass around a tethered dog or a floor covered in a thick layer of feces
- Sounds such as whimpering or crying
- Smells such as ammonia or the odor of decomposition
- Environmental evidence such as the temperature, the heat index, or wind chill at that time, and whether or not it is raining or snowing
- The absence of something that was expected to be present such as a lack of food, water, and/or shelter
- Paraphernalia associated with certain types of abuse such as photographs, videos, journals, and break sticks or gaffs seen in organized fighting
- Witnesses willing to give statements, photos, or videos about what they know

The more information the officer can bring to the veterinarian before the examination begins, the more prepared the veterinarian can be for the examination itself and evidence collection from the animal. As an example, knowing a dog came from an abandoned home is a good start. With the additional knowledge that the temperature in the home was below freezing, there was no food or water found in the house, and there were signs of distress, the veterinarian now knows to monitor for signs of possible frostbite over the coming days in addition to any signs of dehydration and starvation that are immediately evident.

Even when the situation seems futile, document and collect what is possible. A decomposed body may still reveal fractures, gunshot wounds, or ligatures that can help tell the story of what happened to the animal. And just because a suspect is not identified immediately does not mean that one won't be found later. There's only one opportunity to document and collect evidence at the scene so take the time to do it when possible. Of course, if the animal needs immediate veterinary care, then a few photos or a body camera video may be all that can be done. Veterinarians understand that the animal's life takes precedence over evidence documentation and collection.

It is also important for ACOs to realize they have a

huge advantage over most veterinarians: the ACO is likely better trained and more experienced in working an animal abuse case. At this time, veterinarians are taught very little or nothing about forensics and animal abuse during the four years of veterinary school. Those of us who are trained in veterinary forensics have learned it on our own. Therefore, like in any profession, the knowledge, training, and experience of one veterinarian can vary widely from another.

It is not unusual for animal control services to rely on local veterinarians for their animal expertise, even if those veterinarians know nothing about forensics. It can be helpful to develop a relationship with the veterinarian a shelter will be utilizing before a case comes in. This can smooth the process when assistance is needed and will hopefully decrease any "defensive posturing" by the veterinarian. If possible, seek out the veterinarians in your community who are interested in working on abuse cases; not all veterinarians are willing to get involved. Help educate the willing ones about forensics. If you arrive with an animal that needs a clinical examination, ask if you can stay to assist with taking photographs and evidence collection. Realize that they may not even recognize certain evidence, such as the embedded collar or the bloody towel the animal was wrapped in, as being evidence. The ACO may need to gently point out the need to collect these items rather than throwing them in the trash. If an animal needs surgery, indicate what evidence might need to be collected there such as projectiles or embedded collars and how best to collect and preserve it. They may also not realize the importance of running some testing for the sake of the case if not for the sake of the animal. For example, it may be necessary to collect tissue samples from the edges of wounds during surgery to repair those wounds. These tissues can be submitted to a pathologist who may be able to give an idea of how long the wound has been present which may be relevant in a given case. But these tissue samples may not automatically be collected if the veterinarian does not realize their importance.

By working together with veterinarians, ACOs will be able to put together well-investigated cases. This should please the local prosecutor and make it more likely that an animal abuse case will go to court and that a conviction will occur.

*Jennifer Woolf is a veterinarian with a Master of Science Degree Concentrated in Veterinary Forensics. Over the years, she has worked in private practices and animal welfare organizations. In 2014 she founded Woolf Veterinary Forensics Consulting where she lectures internationally on animal abuse, the Link, and veterinary forensics, as well as investigating and consulting on individual cases. Additionally, she works for Veterinary Information Network (VIN) and does occasional relief shifts at local shelters. ❖*

# Proving What You Know

By **Jamie A. McManus**

In a court of law, it's never about what you know. It's about what you can prove. This concept is most evident in animal cruelty cases where the victims cannot speak for themselves, where the crime happens behind closed doors without eyewitnesses, and where the accused has a constitutional right to remain silent. As an assistant state attorney who has taken many animal cruelty cases to trial and litigated countless motions attacking the sufficiency of the State's evidence in animal cruelty prosecutions, there is no doubt that the most important piece of the puzzle in the successful prosecution of animal related crimes is the work of the animal control officer and the veterinarian. These are the witnesses who give a voice to the voiceless, and help the jury understand the details of the crime in a way that no other witness can.

It's not enough to show the jury photos of a neglected animal and present evidence establishing the defendant was the party responsible for its care. It's not enough to elicit testimony from a veterinarian proving the animal died a cruel death, and that the defendant was the last person known to be with the animal. The jury wants to see that a thorough investigation was conducted similar to other non-animal crimes and that law enforcement utilized all available tools within its arsenal to reach the conclusion, beyond and to the exclusion of every reasonable doubt, that the defendant sitting in the courtroom committed the crime he has been accused of.

In every criminal trial, the jury will be instructed on the State's burden of proof. The judge will tell them that.

A reasonable doubt is not a mere possible doubt, a speculative, imaginary or forced doubt. Such a doubt must not influence you to return a verdict of not guilty if you have an abiding conviction of guilt. A reasonable doubt as to the guilt of the defendant may arise from the evidence, conflict in the evidence, or the lack of evidence.

## Florida Standard Jury Instruction 3.7

No matter how obvious the defendant's guilt, defense will argue the jury should have a reasonable doubt, because the State did not perform every possible scientific test, or because the crime was not captured on video, or because officers did not obtain a confession.

The "lack of evidence" argument should be expected in every case.

In 2014, a dog fighting case came across my desk. On the surface, the case seemed like a clear example of defendants being "caught red handed." One would think the matter was an open and shut case. Unfortunately, the idea of a slam dunk case is mostly myth.

Law enforcement received a tip, and because of their quick action, several officers walked in on an active dog fight – in progress. There were a couple dozen defendants gathered around a make-shift dog fighting ring. Inside the ring there were two dogs engaged in an active fight. Over two dozen people were arrested and close to 30 dogs rescued. The dogs, many of them injured, were photographed and examined by a shelter veterinarian. They had bite marks, fresh and healed, on their faces and their front legs. Law enforcement found dog fighting publications in the home of the host dog fighter, along with other paraphernalia such as supplements, a tread-

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mill, and various other hallmarks of an amateur dog fighting operation.

Even though law enforcement witnesses would testify to an active dog fight in progress, that several dogs were present with injuries consistent with dog fighting, that the property was clearly being used for dog fighting, defense counsels for those two dozen defendants declared to the court at hearings and through written pleadings, “the State has no evidence,” and “the State won’t be able to prove this case.” Their protestations lasted for more than two years until finally there was a trial.

However, it wasn’t enough to present the eyewitness law enforcement testimony. A clever defense attorney would argue the State failed to meet its hefty burden of proof without more. Anticipating that tactic, the State retained an expert in dog fighting who had served in an undercover capacity in an active multi-state organization for 18 months. To counter any argument that our officers had simply walked in on a party where some dogs had randomly started attacking each other, the expert testified to how dog fighting operations work. He explained the purpose behind the paraphernalia discovered on scene, and how these organizations manage to keep their activities under the radar of law enforcement. He explained how the dogs are typically kept, fed, trained, and the steps taken to prepare them for an upcoming match. Sure enough, his experience in the field, as an undercover agent in an active dog fighting organization provided undisputable evidence that this was not a couple of dogs who decided to go after each other. This was a planned, organized dog fight.

After the dog fighting expert testified, the State presented a forensic veterinarian with a specialty in dog fighting wounds. She described for the jury the difference between wounds one finds in dogs used for organized fights versus those found in dogs who happened to get into a spontaneous fight. A defendant in the case had claimed he used his dogs for hog hunting, and that the wounds on his dogs came from encounters with feral hogs. The veterinarian had no trouble refuting that claim since the injuries sustained during an attack by a feral hog are significantly different than the injuries inflicted by another dog.

The jury found the defendants guilty, and while many onlookers credited the testimony of these experts for the jury’s verdict, the truth is that neither witness was on scene at the dog fight. The veterinarian did not treat any of the dogs, or even examine the dogs in person. The dog fighting expert and the

forensic veterinarian based their expert opinions on review of all the evidence collected by animal control officers in the field, on the pictures they took, and the paraphernalia they helped collect as detectives, patrol officers, and crime scene investigators processed the scene. Without this evidence, the experts would not have been able to render opinions about the incident or explain to the jury how this event was more than a yard skirmish between two aggressive dogs, or how the injuries were not from a hog hunting incident. Without the expertise of the animal control officers with the experience to understand the importance of certain evidence, that evidence may not have been preserved, and though officers observed an active dog fight with their own eyes, the outcome of the case may have been far different.

Those of us who prosecute animal crimes depend on the diligence and expertise of officers in the field who specialize in investigating animal incidents. A successful trial outcome depends on our ability to prove what is known, and on the determination of those investigating these crimes to hold animal abusers accountable.

*Jamie A. McManus is an attorney licensed to practice in Florida. Since becoming a prosecutor with the State Attorney’s Office in 2013, she has prosecuted dozens of defendants for animal related offenses. She has spearheaded the creation of animal cruelty units in two judicial circuits and has been recognized by the American Society for the Prevention of Cruelty to Animals and Animal Legal Defense Fund for her efforts in prosecuting animal crimes. ❖*

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# What's Cooking, ACOs?

**A**nimal control is a tough job. Sometimes finding the time to cook is even tougher. "ACO Michele" created a Facebook group in 2017 called "ACO Bites" that quickly grew to more than 200 members with an average of 51 posts a month! The group is designed for ACOs and animal care professionals to share their favorite foods with other like-minded professionals! The emphasis is mostly on quick meals that can go from idea to table in under an hour because we all know coming home after a long, hard day and being able to prepare a good meal is important to staying healthy – and keeping one's sanity!

This issue's recipe is for Easy Buffalo Cauliflower Dip. What a great way to stay healthy this spring!

## Easy Buffalo Cauliflower Dip

### Ingredients:

- 1 whole cauliflower
- 2, 8-oz. Packages of cream cheese
- 6 oz. Hot sauce (Franks is recommended!)
- 6 oz. Ranch powder
- Garlic powder Salt/pepper
- Salt/pepper – to taste.
- Optional – shredded cheddar cheese

### Directions:

1. Break up the cauliflower into small pieces.
2. Soften cream cheese and whip until smooth.
3. Add cauliflower, hot sauce, ranch, and seasonings (and cheese if using).
4. Place into a baking dish and bake at 375 degrees F. for 20 minutes.
5. Optional – add cheese on top.
6. Enjoy!



# The Intersection of Forensic Science and Veterinary Medicine in Cases of Animal Crime

By Jason H. Byrd and Adam W. Stern

The current field of veterinary forensic medicine arose from the centuries-long history and development of both human forensic medicine and veterinary medicine. Human forensic medicine as we know it today started with early investigations into human anatomy and disease processes – the field we now refer to as forensic pathology. Hippocrates (460-375 BCE) was the first person to reason that diseases were produced by natural causes and not from the supernatural or produced by acts of God. Shortly after, Ptolemy I Soter (367-282 BCE) was the first ruler to allow medical officials to cut open and examine human cadavers to learn how human bodies function. From there, the first written report of a legal or forensic autopsy was in 44 BCE and performed on Julius Caesar after he was stabbed by Roman senators. Antistius, a medicus, performed the autopsy and documented 23 stab wounds, finding that only one stab wound under the left shoulder blade was fatal. Antistius presented the autopsy results to the Roman people from the Forum. It is thought that this medical expert report from the Forum is the origin of the term “forensics.”

In contrast to the lengthy history of human forensic medicine, it was not until 1356 in London, England, where there was a poor standard of care given to horses, that farriers were requested to form a “fellowship” in order to better regulate and improve their practices. More than 400 years later, the first school of veterinary medicine was established in Lyon, France, in 1762. The Royal College of Veterinary Surgeons was established by royal charter in 1844. The first veterinary college in the United States was the Veterinary College of Philadelphia (1852-1866), and Iowa State University established the first public college of veterinary medicine in 1879.

Based on the establishment of veterinary sciences as a field of medicine for the humane treatment of sick animals, the field of veterinary pathology originated to help diagnose diseases in animals. From the fields of veterinary medical sciences and veterinary pathology arises the field of veterinary

forensic medicine, which is a subcategory of the general study of veterinary medical sciences. In a forensic sciences context, veterinary forensic medicine deals with the aspects of veterinary medical sciences that deal with the detection, documentation, and treatment of medical conditions caused by neglect, cruelty, and intentional injury to animals. To address the many aspects of legal casework resulting from crimes against animals, the field of veterinary forensic sciences involves the necessary work to document the conditions and physical evidence found at the crime scene, document and collect physical evidence from the live or deceased animal(s), and the associated crime scenes. Once documented and collected, this evidence must be analyzed by forensic scientists, and presented as forensic evidence in a court of law. It is important to note that the terms veterinary forensic medicine and veterinary forensic science may not be synonymous as they can refer to different fields of study, many of which are non-medical, and non-veterinary. Similarly, veterinary forensic pathology is a subdiscipline of veterinary forensic medicine and is practiced by board-certified veterinary pathologists. These aspects of an animal crime investigation fall under the general aspects of an “animal cruelty investigation” as the process of case investigation involves much more than the medical skillset of the veterinarian, and the subject matter



expertise of forensic analysts. These aspects may include the skills of law enforcement detectives and investigators, animal control officers, and animal shelter staff.

## Current Status

The developing fields of “veterinary forensic medicine”, “veterinary forensic sciences”, and “animal cruelty investigations” involve the broad application of many fields of science and investigation as they relate to the documentation of the condition of the animal in a legal case resulting from animal crime. The field of “veterinary forensic medicine” is concerned with a broad spectrum of legal and non-legal matters including initial documentation of animal health at a crime scene, collection of physical evidence during the live animal examination and during the forensic autopsy, animal population health in shelter environments, and the use of medical knowledge for wildlife conservation. In legal settings, this also involves presenting the medical documentation in a court of law. To advance the application of veterinary medicine to cases of animal crime, the veterinarian (DVM or equivalent) must have the necessary knowledge to properly apply veterinary medicine in a forensic context. Once this knowledge is acquired, the veterinarian likely will not be limited to practical applications in a clinical environment, as their services will likely be needed in the field (i.e. at a scene of animal crime).

The field of veterinary forensic sciences often involve non-veterinary medicine related disciplines such as crime scene documentation, bloodstain analysis, forensic genetics, entomology, botany, law, and criminal investigation. Crime scene analysts and forensic scientists involved with veterinary forensic science will find themselves dealing with an unfamiliar item of physical evidence, the live animal. These professionals must have training in how to document animal evidence, become familiar with animal handling, and assisting the veterinarian in the documentation and collection of animals as evidence. Just as important as documenting the health status and condition of the animal when discovered at the crime scene is the documentation of the animal as health and condition improves after veterinary care is provided. Remember, the live animal’s condition may be transient since the health and condition can change; therefore, this tracking and follow up documentation is a critical aspect in a legal case. Ultimately, those traditionally involved in the documentation of crime scenes must work with the veterinarian to properly understand and document the animal medical evidence.

In many cases, the legal investigation would not occur if not for the work of law enforcement and animal services investigations (photo on pg. 26). The legal case is often developed through the standard process of investigation to include surveillance, witness and suspect interviews, development of the search warrant, establishment of

probable cause, collection of evidence, prosecutorial review, and all aspects of the trial process. As these often separate, related fields develop, the terminology utilized to describe the applications and roles should be continually refined to help reduce confusion and improve accuracy in descriptions. In addition, there is a need to emphasize that veterinary medical sciences are not the apex science under which all other work is completed in an animal neglect or cruelty investigation. There are other equally important areas of scientific inquiry and investigation that are non-medical, and without them the legal investigation could not proceed. Therefore, the use of a term that encompasses all work related to animal crime investigations may be more applicable. One such term that is already in use internationally, is “animal forensic sciences.” This includes all disciplines, medical and non-medical, of the roles and skillsets required to bring a case of animal crime to a court of law. The work of clinical veterinarians, veterinary forensic pathologists, law enforcement officials, attorneys, forensic scientists, wildlife conservation officers, and animal welfare advocates are all included under the broad term of animal forensic sciences. Additionally, this term would be inclusive of all animal species that may become part of a legal investigation (companion animals, farm animals, and captive and free roaming wildlife).

## Current Obstacles

One of the obstacles inherent in forensic science and medicine casework involving animals is the many species that may be involved and the mosaic of laws applying to the various species. The fundamental issue is that most laws and legal precedent in the United States centers on the thought that animals are property. These laws are most prevalent for domestic and farm animal species. Wildlife species may be protected under federal jurisdiction, state fish and game laws, local ordinances, or provided on legal protection as in the case of nuisance species. Many cases may not be referred to the proper authority, and if so, the agency of jurisdiction may be reluctant or unable to prosecute due to lack of evidence, or do not have the staffing or financial resources to prosecute all cases.

In many cases, especially those involving domestic or companion animal species, the law enforcement agency of jurisdiction may not investigate a case due to a policy or practice of prioritizing other crimes. For many law enforcement agencies, higher priority crimes such as homicide, assault and battery, and robbery cases take priority. Poor staffing and a low number of officers and investigators may limit law enforcement agencies from fully investigating a case of animal crime. Additionally, the high cost of animal cruelty cases can be a deterrent to investigation. Law enforcement agencies are aware of the high cost of medical care and shelter for the animals that will be needed while

*(continued on page 28)*

(continued from page 27)

the case makes its way through the legal system and into the prosecutorial and trial phase.

Another aspect of the legal investigation into animal crime is the difficulty in obtaining expert analysis of the collected evidence. To date, there are very few veterinarians who are properly trained and available for live animal forensic examinations and documentation of physical evidence from the animal, as well as the animal's medical condition in a manner that can be successfully presented in a court of law. Most forensic sciences laboratories serving law enforcement agencies are not equipped or trained for animal casework. In most cases, a veterinarian in a private clinic setting will be the best resource for law enforcement, and in many cases, even if the veterinarian volunteers their time, the medical and scientific resources needed for the documentation and analysis of the collected evidence is costly.

There are even fewer veterinary forensic pathologists available to perform forensic autopsies in these cases. It is important to note that the American College of Veterinary Pathologists (ACVP) is the oldest veterinary specialty organization recognized by the American Veterinary Medical Association. Within ACVP there are now Fellows in veterinary forensic pathology who are scattered throughout the country, available to perform forensic autopsies. These individuals are best suited for examining deceased animals given their advanced training in veterinary pathology and forensics.

### The Future

Education is one major aspect involved with improving the future of animal forensic sciences. It is important for the colleges of veterinary medicine in the United States to add forensic science and medicine coursework to their doctoral curriculum. The documentation of the animal medical condition at the time of discovery by law enforcement is critical and cannot be overlooked. In the case

of live animals, just as critical is the animal's improvement over time when proper veterinary care is applied. Medical documentation in the rate of improvement in nutritional state, disease progression, wound healing, and behavior are germane to the physical evidence presented in a court of law. Advanced training for veterinary pathologists and those undergoing pathology training should be provided in forensic pathology. This would increase the number of board-certified veterinary pathologists with expertise in forensic pathology and simultaneously allow for increased access to these professionals for performance of forensic autopsies.

To assist in the medical documentation of animal health status over time, additional training should be available for animal control officers and animal shelter staff in municipal and non-governmental animal welfare organizations. Specialized training in animal crime scene processing should be made available for animal control officers and law enforcement officials including investigators, detectives, and crime scene analysts. Law enforcement officials, animal control officers, and shelter staff with the proper training in legal cases that involve animals could greatly reduce the need for veterinarians to be involved in all stages of the investigation. To better assist law enforcement, forensic scientists in laboratories who serve law

# 2023 NACA MEMBERSHIP MEETINGS

Members are encouraged to join the monthly membership meetings on the second Thursday of each month at 8 a.m. PST / 11 a.m. EST. Log into your member portal for the zoom link!



enforcement jurisdictions should be trained on the proper application of their field of specialty to cases of animal crime. Toward this goal, resources for forensic analysis could be enhanced through the utilization of veterinary schools serving as a laboratories and forensic analytical resources. Current full-service forensic science laboratories could expand services to include some aspects of animal forensic science casework.

## Conclusion

There are several obstacles that need to be overcome as we continue to investigate animal crimes.

Society expects that cases of animal cruelty be investigated just like any other crime; therefore, we must meet this challenge head on. Specific to education, the COVID-19 pandemic has resulted in our ability to have virtual training opportunities that can be followed up by advanced in-person trainings. Access to forensic experts is slowly increasing; however, we must look to public-private partnerships to increase funding for forensic laboratories so that we can increase our ability to meet the needs of investigators. Lastly, there are always calls for new and improved animal cruelty statutes; however, we must use the current statutes available,

use them to their full potential, and then we can show how those laws are inadequate.

*Jason H. Byrd, PhD, D-ABFE is a professor and associate director of the William R. Maples Center for Forensic Medicine at the University of Florida College of Medicine. He is a board-certified forensic entomologist and is a Fellow of the American Academy of Forensic Sciences. Dr. Byrd specializes in mass fatality management, disaster victim identification, and veterinary and wildlife forensic sciences. He has previously served as president of the American Board of Forensic Entomology, the North American Forensic Entomology Association, the International Veterinary Forensics Sciences Association, and is the current president of the Council of Forensic Science Educators.*

*Adam W. Stern, DVM, DACVP is a professor of Forensic Pathology at the University of Florida's College of Veterinary Medicine. He is a board-certified Veterinary Pathologist, and an American College of Veterinary Pathologists Founding Fellow in Veterinary Forensic Pathology. He specializes in the forensic death investigation of animals and performs forensic autopsies on animals from throughout the country. Dr. Stern has been recognized for his work by multiple professional organizations including the American College of Veterinary Pathologists and the Florida Animal Control Association. He has previously served as president of the International Veterinary Forensic Sciences Association. ❖*



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# Upcoming Training Opportunities



## April 2023

- Basic Animal Control Officer Training – April 24 – 28, TN

## May 2023

- Wildlife Rehabilitation Skills: Raccoon Care – May 6, Plano, TX
- Wildlife Rehabilitation Skills: Opossums - May 6, Plano, TX
- Community Cats Podcast TNR Certification – May 6, online
- Lions, Tigers, and Speech and Religion, OH MY!  
Applying an animal-forward lens to first amendment jurisprudence – May 9, online
- Wildlife Rehabilitation Skills: Bat Basics – May 13, Weatherford, TX
- Community Cats Podcast: Surrender Prevention Certification Workshop – May 17, online
- NACA Monthly Board Meeting – May 18, online
- Bat Rehabilitation Essentials: Caring for Mothers and Pups – May 20, online
- Community Cats Podcast: Targeted TNR and getting the most bang for your buck – May 20, online

## June 2023

- Community Cats Podcast TNR Certification – June 3, online
- Illinois Animal Welfare Federation Conference: Prairie States – May 4 – 6, IL
- Community Cats Podcast Online Kitten Conference – June 9 – 11, online
- SDZWA Safe Capture Chemical Immobilization – June 13 and 14, VA
- NACA monthly meeting – June 15, online
- Essentials of wildlife nutrition – June 15, online
- Stand up for Animals with a Case You Can Stand Behind – June 22, online
- Community Cats Podcast the Dog Trap: A trapper's best friend – June 24, online

## July 2023

- Wildlife Rehabilitation Skills: Creative enrichment on a shoestring, July 8, online
- Community Cats Podcast TNR Certification – July 8, online
- Everyday ethics for Animal Control Officers, July 13, online
- Community Cats Podcast Feline Leukemia Day – July 15, online
- Cats and Wildlife – July 20, online
- NACA Monthly Meeting – July 20, online
- Infections and Zoonotic Diseases – July 22, online
- Tennessee Animal Control Association Conference – July 31 – August 1, Cool Springs TN

## August 2023

- Community Cats Podcast TNR Certification – August 5, online
- Best Friends Annual Conference – August 10 – 12, Houston TX
- Rabies Risk Assessment – August 12, online
- NACA Monthly Meeting – August 17, online
- Lessons from the Field: How One Community Transformed Its Response to Animal Cruelty Through Collaboration – August 24, online
- Introduction to Bat Rehabilitation – August 26, online

***Check out the NACA calendar of events for more information!***

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