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THE FVTA UPDATE

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What is this?
See Page 6 for Answer

WHAT'S IN THIS QUARTER'S ISSUE:

A WORD FROM THE PRESIDENT

WRITTEN BY DEWEY MADDOX, CVT

Summer is here, the humidity and the temperatures are up. Taking care of yourself and watching over your patients closely during this time is critical. This is also a great time to start checking your CE hours to be sure you are ready for the upcoming certification renewal. The FVTA requires 15 RACE approved CE credits every 2 years for certification renewal.

The Florida Board of Veterinary Medicine has gone back to in person meetings. Our legislative action committee works hard to make our voices heard during these meetings, but now that they are held in person, we need you! This is an excellent opportunity to let your voice be heard. We will keep everyone updated on the location and time of the next meeting through Facebook. The location changes to give everyone in the state an opportunity to attend. If you have any questions don't hesitate to reach out.

The Executive board is currently working on the final preparations to open the upcoming renewal cycle. We have a great renewal gift this year and I am very excited. We are building redundancy within our organization to ensure documents and protocols continue during turnover of the executive board. We are also clarifying and updating our constitution and by-laws which should all be finished this fall.

SELF-CARE, WHAT IS IT REALLY?

WRITTEN BY ERIN MCNALLY, LVT

Self-care is the practice of taking action to preserve or improve one's own health. When we look at that definition, it is easy to see that self-care is a more in-depth process than treating yourself to a pedicure every few months. I wanted to take the opportunity in this newsletter article to just share some simple action items you can start today to work on building up a self-care routine that not only impacts your welfare but those around you as well. After all, you are no good to others, including the animals in your care, if you are not being good to yourself.

Action 1: Get Active! (I hear those sighs!)

- Participating in something outside of your normal work activity such as hiking, yoga, running, even walking.
- Get out in nature, after all, you are in Florida, you are surrounded by so many options!
- Go kayaking, paddle boarding, or go to the beach.

Action 2: Get Rest! (Ha, I heard that laugh!)
You should try to get between 7-9 hours of rest a night. While I know so many of you are laughing at me right now, trust me, I am guilty of less than that too. Let me give you this food for thought, did you know that the CDC has proven that the impacts of insomnia are similar to that of being intoxicated? Let that sink in…read it again… and now think about it when you are getting ready for bed tonight.

- Take rest breaks throughout the workday, just 1–2 minute breaks to pause in between cases or procedures.
- Disconnect electronics at least 30 minutes before bedtime.
- Breathing exercises- we should pause at least 3 times a day to take conscientious breaths.

Action 3: Manage your Mindset!
Remember this: Event + Response = Outcome. You are in control of your thoughts, which means you are in control over your response and the outcome. This is also a good time to point out you can only control your thoughts and response, not others, no matter how hard you try.

- Meditation & Mindfulness- pause to bring awareness to yourself, your breath, and where you are at in your mindset. This can be just 2 minutes to start.
- Journaling- Having trouble sleeping or managing all those thoughts running through your mind?
    - Thought download- Set the timer for 5-15 minutes and write down every thought that pops into your mind, without judgement or thinking about it.
    - Gratitude journaling- Write down the good things in your life and what you are grateful for, be as specific as possible.

WILDLIFE VETERINARY FORENSICS: A NEW OPPORTUNITY FOR VETERINARY TECHNICIANS IN CONSERVATION

WRITTEN BY KATRINA MISHEL

Introduction

Wildlife veterinarians play a major role in helping to care for and conserve exotic species, and combat wildlife diseases[1]. Even with all of the advances and ever-expanding roles, veterinary medicine still lags behind compared to human medicine. An area of specific concern is forensics, where the current professionals of veterinary forensics are establishing the scientific basis of determining criminal versus natural causes of injury and death in animals[2]. Veterinary forensics is a relatively new and growing specialization within the veterinary field, so much so that almost 75% of veterinary pathologists felt that their training did not adequately prepare them to handle the cases they received[2]. Veterinary forensics is increasingly being utilized in animal cruelty cases[3]. With the rise in public concern for animal welfare, laws are being created to help prevent cruelty towards animals of all species[3,4]. According to Fan[5], even the FBI started tracking animal crime cases in January of 2016. As of now, veterinary forensics is mostly being used in neglect, illegal killings, and veterinary misconduct cases, but wildlife crime is one of the most profitable criminal industries worldwide[3]. By translating the results from companion animal cases, forensics skills can be used to evaluate wildlife crime scenes, body parts, carcasses, and even the habitats where the crimes happened[3].

How do veterinary technicians fit into this equation? Veterinary technicians are found volunteering or working for animal hospitals, research centers, zoos, circuses, sanctuaries, and even rehabilitation facilities[6]. With the increase of wildlife veterinarians in conservation assessing critical health factor impacts on wildlife population dynamics, developing new technologies, collecting biological data, managing emerging diseases, and much more, these veterinarians and biologists need technician support. 7].

With the specific skill sets veterinary technicians have, it would be detrimental not to have them assist in conservation efforts and wildlife veterinary forensics. Since veterinary technicians' skills are valuable to conservation, this article aims to make veterinary technicians aware of possible opportunities in the growing field of wildlife veterinary forensics as it advances. Veterinary technicians already know companion and farm animals, while others are specializing in wildlife and exotics, they can take the methods of veterinary forensics being used in companion and farm animal cases and transfer them to wildlife and conservation cases.

Companion and Feed Animal Cases

Due to the increased response to animal cruelty over the last twenty years, there has been a growth in the prosecution of crimes against animals[8]. There is some agreement that a big part of this increase was due to the prosecution of Michael Vick and his organized dogfighting ring[5,8]. The prosecution of dogfighting was helped by veterinary forensics research documenting injury patterns in dogs[8]. Veterinary technicians and veterinarians are usually the primary sources that encounter animal cruelty firsthand, and so often become involved in the legal investigations, conducting examinations, and collecting and analyzing evidence[9]. Due to the increased awareness of animal cruelty and the lasting effects it has on everyone, veterinary forensics has been recognized as an important application to investigation, documentation, and prosecution of crimes against animals and thus led to the rapid growth of the veterinary forensics field[8]. As with people, there is a broad range of criminal activities that need expert witnesses and research to rely on for evidential purposes.

Most forensic cases involve companion animals, followed by livestock, and finally, a comparatively small amount involve "exotic" animals (birds, reptiles, other mammals, etc.)[10]. Almost half of these cases are results of neglect, abuse, and illegal killings[10]. Unless the animal is able to be saved or survived the incident, necropsies are how veterinary technicians and veterinarians find the evidence they need. Veterinary technicians assist in necropsies by taking notes, photographs, samples, and aiding in dissection[11].

The most common cause of death of companion animals was by gunshot, followed by poison, then drowning and suffocation; however, stab wounds and blunt force trauma were the most common injuries[10]. As for the livestock, most cases involved neglect, identifying the cause of death, and determining losses from the death of said animals[10]. Necropsies of the production animals involved in these cases showed that most deaths were due to poor health, disease, stress/suffering, and trauma[10]. Some of these injuries and causes of death can be found either accidental or intentional.

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Ongoing Research

In order to provide expert witness in criminal proceedings, one must be an expert in the field. Since the need and interest for veterinary forensics has only happened recently, theories and techniques are still evolving in the veterinary field. Understanding how the body fits in with the circumstances surrounding the crime scene creates the whole picture and will help the evidence to withstand scrutiny in the courtroom[12]. If veterinary technicians are able to get in on the ground floor, they can aid in testing and creating these set guidelines of evidence collection, especially since it is the technician's responsibility to collect and analyze evidence[13]. However, a lot of veterinary professionals have almost no training in forensic crime scene analysis, but at least have some understanding of forensic body collection through necropsies. The combination of these ideas has led to the attempt of set guidelines and standard operating procedures[12]. It has also led to partnerships between animal organizations and law enforcement, like that of the ASPCA and the New York Police Department, where there is cross-training on the signs of animal cruelty, evidence collection and documentation, and even how animal cruelty is linked to domestic violence[8].

Once the veterinarian has the body to examine, there are many ways to rule in or out a cause of death. Sometimes it is through examining obvious causes of death (obvious wounds, infections, etc) and other times it's by ruling out possible causes of death if the death was more obscure. One of the newer ways to acquire evidence is through imaging techniques like CT and MRI scans[14]. In human medicine, it is typical for technicians to conduct these scans, and veterinary technicians can perform these procedures for veterinarians.

Photographic documentation is an integral part of the necropsy and judicial proceedings, but typical photographs don't always show an accurate representation of the body[14]. It is shown that the use of CT scans (and other modern imaging techniques) can help create optimal planning of the necropsy to increase the likelihood of identifying the relevant changes in the body and thus optimize gathering the relevant evidence needed for prosecution[14]. Depending on the funding available, wildlife forensic veterinarians and their technicians can utilize portable CT scanners in more semi-rural areas.

Due to the high number of cases of gunshot wounds in animals, there have been many studies done to investigate firearms and gunshot injuries. These types of injuries use a combination of ammunition knowledge, radiology, and the ability to distinguish bullet wounds from other types of trauma (bite wounds, lacerations, vehicle strikes, etc.)[15]. Once a wound is determined to be a projectile from a gun, there are methods to determine firing distance[16].Cotton swabs are the most efficient at collecting residue to determine firing distance[16]. Cotton swabs are cheap and can easily be packed for travel, thus wildlife veterinary forensic technicians can utilize them to collect evidence in the field. Then, veterinary pathologists would be able to use these studies to determine if a wild animal died from natural bite wounds or illegally by a poacher and possibly even the poacher's methods.

Another area of wound examination that has received a high level of scrutiny is blunt force trauma due to the number of factors that can affect these types of wounds. Blunt force trauma can appear on the body as scrapes, lacerations, or contusions both on the skin and the inner organs[17]. These cases need extensive photographs and documentation by the veterinary technicians due to the fact that the lesion is not only affected by the object's mass, velocity, size, shape, and angle of impact, but also the mobility and plasticity of the impacted organ[17]. Surprisingly, even with all of the factors that go into determining blunt force trauma injuries and what caused them, it is now possible to determine if the injury was accidental or a non-accidental injury (NAI)[18]. With the discovery that blunt force trauma can be determined as accidental versus NAI, wildlife forensic veterinarians can determine if an animal was killed by villagers and poachers purposefully with blunt objects, or if the animal died from other blunt impacts such as internal injuries from rock slides, tree falls, etc. Other helpful wound studies that wildlife forensic veterinarians and their technicians can use to determine natural versus criminal activity include: electrical injuries, sharp injuries, poisoning, and drowning[19]

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Veterinary Forensics Possible use in Conservation

There is little evidence on the number of poachers caught and taken to trial, but thousands of people are arrested for poaching in the United States[20]. Experts believe only one to five percent of poachers are actually caught[21]. This could be, in part, due to lack of forensic evidence and the lack of ability to go to trial. Exotic animal trials were comparatively small when working against companion and farm animal trials[10]. With the advances made in companion and feed animal medicine, some of those techniques can apply to wildlife and conservation trials as well. Studies on tiger poaching methods found that there were three main groups of people killing tigers and that each group used different methods[22,23]. Group 1 were villagers who used clubbing with axes and sticks to protect the village or to eat the tiger, Group 2 were poachers who used poison in order to sell the tiger parts, and Group 3 were pirates and trappers who trapped and shot the tigers for eating and trading[22].

Each of these methods of killing have been tested and used as evidence in companion animal trials (mainly dogs). Studies have also been able to confirm cases of poisoning in dogs and whether a sharp injury was caused by a stab, chop, or incision[24,25]. These types of injury studies could help conservationists determine if a wound was a crude sharp injury or made by other animals.

DNA analysis is also being used to identify species by using only fragments of biological material[26]. Veterinary technicians can collect and prepare biological material from different organs and different species. Genetic testing is a viable option in cases where the animal cannot be identified[26]. This research could easily transfer and be adapted to conservation purposes to help identify animals that are too disfigured to identify by sight.

Veterinary Forensics actively used in Conservation

There have been a few documented situations where some conservationists are already taking advantage of veterinary forensics. Technicians are often the ones to operate spectrometers and analyzers as part of a non-destructive way to identify the species to which claws belong to. The accuracy of this process is shown by testing Royal Bengal Tigers, Indian Leopards, and fake claws against each other due to the similarities between the two species and the challenges of differentiating the two[27]. The team found their method of using ATR-FTIR spectroscopy yielded high predictive accuracy in a rapid, non-destructive, reliable, and eco-friendly manner[27].

Veterinary forensics is not limited to conservation of animals on land either. Fishing activities are one of the most relevant threats to marine animal conservation, especially since these animals can be found tangled in fishing gear[28]. Without the obvious presence of fishing gear or wounds, marine animal cases need to be ruled out as drownings. In these types of situations, a veterinary technician assists in the necropsy and collection of materials needed to prep the samples. A pilot study tested a diatom technique used in human medicine to determine if it is possible to rule in or out drowning cases of marine animals[28]. The team used some of the same protocols that are used in human medicine to microscopically search for diatoms in the bone marrow of dolphins and sea turtles[28]. Drowning was a cause of death due to human related activities in both the dolphin and sea turtle species[28].

Final Thoughts

Even with the advances happening in veterinary medicine, the caveat to all of the studies mentioned above is that more testing, research and training needs to be done. Veterinary forensics is a new and developing field, only a few decades old. Although much testing has been done for companion animals, many of the studies being done for wildlife and conservation are revolutionary and only pilot studies. There is a slow but increasing interest in veterinary forensics that will eventually show up in conservation as well. In order to be successful, cooperative learning and cross training is advised since many veterinary professionals are not trained in forensic science and procedure. Veterinary technicians have already perfected being a “Jack of all Trades”, learning crime scene analysis basics will add to the repertoire. It is strongly advised to become a certified veterinary technician and have a certificate or degree in veterinary forensics in order to be successful in the field. There are plenty of continuing education opportunities and degrees available.

Several studies discuss the fact that companion animal research is taking protocols in human medicine and either translating or modifying them to help jump start research[29,30]. It is only a matter of time for these protocols to be translated or modified further to advance wildlife and conservation research. With the knowledge, skillset, and expertise veterinary technicians have in companion animal medicine, it would be easiest for them to transfer these skills over to assisting conservation efforts. It took time for general interest in animal welfare to develop, and as people continue to learn it is only a matter of time until the interest in wildlife welfare grows to the point of creating stricter laws and legislation as well. As that happens there will be a greater rise in veterinary forensics research being performed to help conservationists world wide.

Veterinary technicians should be the optimal choice in assisting wildlife veterinarians and conservationists. Veterinarians and veterinary technicians are vital components to the growth of wildlife veterinary forensics that can be used to help convict poachers, determine causes of death, monitor ecosystem health, and much more.

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WRITTEN BY KATRINA MISHEL
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WHAT IS THIS?

FROM PAGE 1

SUBMITTED BY KAREN MOSS, CVT

PLATYNOSOMUM FASTOSUM
lizard poisoning fluke

Photo was taken from bile duct aspirate post mortem.

Overview of Life Cycle

- Trematodes (flukes) have indirect life cycles that require one or two intermediate hosts to reach their infective stage.
- Adults are in the bile ducts of cats. Operculated eggs leave the host via feces. Terrestrial snails ingest the eggs and sporocysts containing cercariae develop in the snail. The sporocysts may leave the snail and are ingested by terrestrial isopods (pill bugs, sow bugs) or ingested by several species of amphibians or reptiles (lizards – Anolis spp., toads, geckos, skinks) where they encyst as metacercariae in the bile duct or gall bladder. A cat then ingests these hosts. The metacercariae will excyst and migrate to the bile ducts of the cat and mature.

Stages

- Adult flukes are 4-8mm long.
- Eggs are dark brown, operculated and 34-50 x 20-35µm. Eggs contain a ciliated miracidium which can usually be seen.

Disease

- Severe disease and clinical signs are often absent in cats with few worms (<125).
- Severity of disease is proportional to the number of flukes and duration of infection.
- Infected cats may experience temporary inappetence, low fever, lethargy, weight loss, poor haircoat.
- Severe clinical signs include vomiting, jaundice and diarrhea.
- Chronic infections can result in biliary hyperplasia and liver failure
- "Lizard Poisoning" refers to disease as a result to ingesting lizards containing the *P. fastosum* infective stage (metacercariae) and subsequent infection with the fluke – not as a result of ingesting the lizard itself.

Prevalence

- *Platynosomum fastosum* is a liver fluke of cats in Florida, other areas of the southeastern United States, and Hawaii.
- Prevalence has been reported at 15-85% in tropical and subtropical environments.
- Most common in cats that are allowed to hunt.

Host Association and Transmission Between Hosts

- This is a parasite of felidae.
- Other animals in a household are usually not at risk of obtaining infections due to the need for an intermediate host.

Prepatent Period and Environmental Factors

- Eggs are found in the feces about 4-5 weeks after reaching the bile duct of an infected cat.

Site of Infection and Pathogenesis

- The adult worms are found in the bile ducts of cats.
- Liver and bile duct lesions include cholangitis, hepatic fibrosis, cholangiohepatitis and cholangiocarcinomas.
- Hepatomegaly has also been reported.

Control and Prevention

- Cats should not be allowed to hunt to prevent ingestion of the intermediate hosts.

Source: Companion Animal Parasite Council, https://capcvet.org/guidelines/platynosomum-fastosum/