The newsletter of the Society for Wildlife Forensic Science

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SWFS NEWS

Inside this edition: Pangolin Scale Measurement, Forensic Medicine, SWFS Workshop

Scale measurements assist in combating pangolin trade

By Marli de Bruyn, Nozipho Khumalo and Sonia Kropff

Pangolins are scaled mammals with eight species found on two continents. Four species occur in Africa: black-bellied pangolin (Phataginus tetradactyla), white-bellied pangolin (Phataginus tricuspis), giant ground pangolin (Smutsia gigantea) and Temminck's ground pangolin (Smutsia emminckii). Four species are found in Asia that include the Indian pangolin (Manis crassicaudata), Philippine pangolin (Manis culionensis), Sunda pangolin (Manis javanica) and the Chinese pangolin (Manis pentadactyla). All pangolin species are listed Vulnerable to Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species and on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) prohibiting any form of trade in live animals or their derivatives.

It is well known that all eight species of pangolins and their derivatives are trafficked in high volumes across the globe. Scales are mostly trafficked and even though DNA technologies can accutately identify the species, it remains difficult to estimate the number of pangolins in seizures. Expanding knowledge by applying robust conversion parameters may be critical to determine the number of pangolins being trafficked to asssit in judicial proceedings in range countries and countries where seizures are made; and can contribute to threat assessments of pangolins within their natural distribution ranges.

To this end, the CITES Conference of the Parties CoP18 adopted Decision 18.239 for pangolin at its 18th meeting held in Geneva in 2019). The Secretariat then worked with Species Survival Commission (SSC) Pangolin Specialist Group of the IUCN and other

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Welcome from the SWFS President

Dear SWFS Members,

Welcome to the May 2022 edition of the SWFS Newsletter.

We are almost half way into the year and there have been some exciting things happening in 2022.

A few notable highlights has been the planning of the 2022 conference in Ashland, OR. Join us as the Society for Wildlife Forensic Science (SWFS) hosts its first in person conference in three years. The 2022 conference will be October 30-November 4, 2022 in Ashland, Oregon. Abstract deadlines for the conference is currently June 17th, this deadline will likely be extended as the registration for the conference will not be available until the end of May. This year we are taking submissions for both oral presentations and poster presentations via an electronic form found here. We are also taking applications for the SWFS 2022 Bob Anderson Student Scholarship. You can find the application here. This scholarship will be awarded to two college students who are studying wildlife forensic science or a related science field. The Scholarship covers the cost of registration and one banquet ticket plus $500 to help with travel. Chosen applicants are required to give a 10-15 minute presentation on their presentation abstract topic at the Society for Wildlife Forensic Science Meeting. We hope to see you in Ashland October 30th through November 4th, 2022. Registration and hotel details can be found on the SWFS website.

The end of April was the close of the first timber proficiency beta test offered by SWFS. At least ten laboratories across several countries participated in the timber test. The US Fish and Wildlife lab did the bulk of the heavy lifting to coordinate the efforts on this. The plan is to continue offering timber proficiency tests annually once the logistics of have been worked out. Additionally, SWFS plans to offer an Ivory proficiency test at the 2022 conference. This test will be in conjunction with the Ivory workshop.

Welcome from the SWFS President

Just a reminder that the Society does have a couple grant programs in place. We have the Travel Grant, the purpose of this grant is to provide support to SWFS members who are in need to visit collaborators in order to exchange knowledge and skills related to wildlife forensics. Now that travel is a bit easier, we look forward to seeing a few application come in for consideration. There is also the Small Grants, the purpose of this grant is to provide support for the development and validation of scientific methods for use in wildlife forensic casework that is not typically supported by research grants; this includes things like validations studies, ring-trails and new proficiency tests. To find more information on these grants please visit the SWFS website.

As always, I would like to extend my gratitude and thanks to all that have contributed to the SWFS Newsletter, over the course of the last two years it has become exceedingly more difficult to obtain article for the Newsletter. If you are interested in sharing news from your lab, please let us know. I would also like to thank s the production team that put this periodical together.

Best wishes

Tasha Bauman

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Scale measurements assist in combating pangolin trade

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relevant experts in collaboration with pangolin Range States, to develop conversion parameters for all pangolin species. It is expected that these parameters will enable the reliable determination of the number of animals associated with any quantity of seized pangolin scales. This information can be used by Parties in cases where national legislation demands that such information be provided for court purposes. The contracted consultants representing the IUCN SSC Pangolin Specialist Group were Dr Dan Challender and Dr Matthew Shirley both based in the UK.

Through the Director-General and the Chief-Director: Sector Enforcement of the Department of Forestry, Fisheries and the Environment (DFFE) South Africa, being on of the Range States, requested SANBI to support the project by providing specimens and data, capacity and competencies. Prof. Antoinette Kotze, Director Foundational Research & Services of the South African National Biodiversity Institute (SANBI) led the project with team members Marli de Bruyn, Nozipho Khumalo and Sonia Kropff. Prof. Kotze is a member of the IUCN SSC Pangolin Specialist Group and oversees wildlife forensic case work in SANBI and under contract with the South African Police Services.

This specific project involved building knowledge on the Temminck's ground pangolin, the only species occuring in southern Africa by assessing the representative proportions and the typical proportion of the body mass comprising scales for each pangolin. Visual identification of pangolin scales to species level is often possible, though still not that accurate in descriptions. The large volumes of scales in mixed species seizures further limits the capacity of law enforcement authorities

to readily convert seizures to an estimated numbers of pangolins.

The project contributed hugely to derive genus-specific, country/region-specific, and continent-specific conversion parameters for pangolins. To this end, the team collected data on eight Temminck's ground pangolin carcasses that were available. Data collected included scale mass, scale morphological measurements and descriptions to aid the compilation of a scale identification guide for the CITES Parties. SANBI contributeed maximum input with 19 photographs, 7 scale mass measurements plus 3 scale dimension measurements for each of 140 scales for each of 8 specimens. This was a massive effort and it is hoped that the information compiled will contribute to the global effot to assess the number of pangolins as well as the species in seizures.

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How good is your forensic medicine?

John E. Cooper and Margaret E. Cooper ask whether you and your practice are prepared.

An on-farm post-mortem examination of a puppy that died under strange circumstances. Foul play was ruled out. Note the allimportant taking of hand-written contemporaneous notes.

"Forensic medicine? Doesn't that involve appearing in court? And dealing with some rather unsavoury people and circumstances? No thanks!"

The response above is probably fairly typical because most practising veterinary surgeons want to be dealing with patients, not getting embroiled in legal matters. But increasingly the word "forensics" is used to describe a method of working, adopting systems that help ensure that records are accurate, that samples are properly handled, and that reports and opinions are presented in a systematic and professional way – all of which are vital in a modern veterinary practice.

How and why then might veterinary surgeons benefit from an understanding of forensic methods?

The first is when their practice becomes involved in a potential legal case. The scenario is familiar to many vets. The police or the RSPCA bring a dog or a cat to the practice and ask for it to be examined because there is a suspicion that it has been assaulted or neglected. Or a large animal practitioner is asked to visit a farm where malicious poisoning of stock is alleged.

In such situations the veterinary surgeon may find him/herself in court giving evidence as a witness of fact, a professional witness or an expert witness (Cooper and Cooper, 2007, 2013). They will find helpful advice in the RCVS Guide to Professional Conduct:

22. Giving evidence for court – Professionals (rcvs.org.uk).

Some knowledge of forensic procedures and terminology makes the experience far less stressful.

Other "legal" scenarios can relate to dogs biting humans, cattle trampling on walkers who have strayed from the footpath, suspect zoonoses and possible "non-accidental injuries" (NAIs) in an animal (Munro and Thrusfield, 2001), where there may or may not be links with child abuse and domestic violence (Scott-Park, 2011).

Away from actual legal cases, veterinary surgeons may be asked to give an opinion – and perhaps write a report on – matters that can range from noisy cockerels or the identity of bones found during excavation of soil for a new house to the likely effect of diverting a stream on land where livestock graze.

A discarded empty container on farmland is a clue to an illegal poisoning incident.

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How good is your forensic medicine?

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A veterinarian with an interest in wildlife may be invited to examine a live injured deer, or participate in a post-mortem examination of a beached seal. Such incidents start out with an apparently straightforward clinical examination or field necropsy but may lead to questions being asked about the circumstances of the injury or death. In all such instances, some forensic knowledge is invaluable (Underkoffler and Adams, 2021).

We suggest that all those working in a veterinary practice, however, should be aware of potentially litigious situations and be prepared to deal with them. We advocate a "traffic light system"

- A definite likelihood of legal action. For example, an animal brought in by a uniformed police officer.
- A possible legal action – be prepared. For example, a dog with unusual distribution or appearance of wounds, an inconsistent history and suspicious behaviour on the part of the owner(s) or a valuable bird of prey with little or no documentation.
- Legal action unlikely. For example, a known client or an apparently co-operative owner with a cat that needs routine vaccination.

A possible legal case. The feet of a bird of prey showing severe pedal lesions associated with tight-fitting jesses. (Courtesy of Jenny Morgan)

What then are the important features of the "forensic method" that are so helpful in veterinary practice? We discuss some of them below. We argue that following well-tested forensic protocols in a veterinary practice not only helps with everyday management but provides proof that the practice is adhering to systems – and this can be helpful defence in the event of a subsequent complaint by a client or an investigation by the RCVS or even the police or other officials.

Complaints received by Trading Standards about food being sold for wild birds – and its possible danger to avian and human health – may necessitate veterinary investigation.

They include:

Record-keeping

Record-keeping is of such importance both in judicial proceedings and in diagnostic work that the following is recommended (Cooper and Cooper, 2007):

- Making a written contemporaneous note of all messages received by telephone or verbally, including date and time.
- Recording when packages containing samples are despatched or received – see also below.
- Having available in the practice additional means of recording evidence, e.g. video camera or digital recorder.
- Adhering to protocols and standard operating procedures (SOPs).

Birds of prey presented for veterinary examination often present legal challenges. This is a trained gyrfalcon (Falco rusticolus).

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How good is your forensic medicine?

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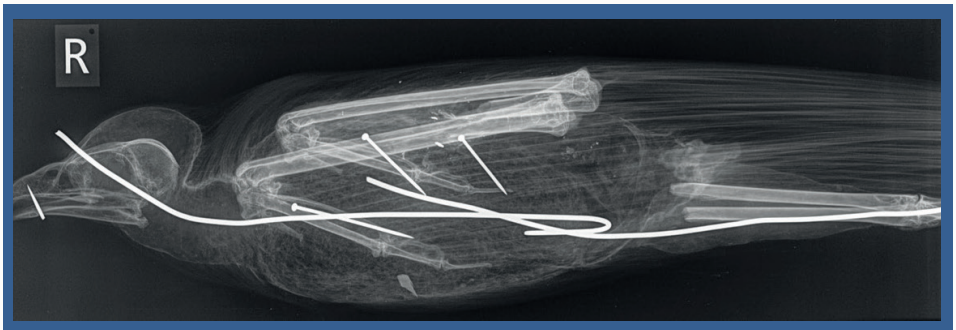

A veterinary radiograph of a mounted ("stuffed") bird, taken to try to identify the taxidermist. How and which materials have been used to mount such a specimen are often characteristic A veterinary radiograph of a mounted ("stuffed") bird, taken to try to identify the taxidermist. How and which materials have been used to mount such a specimen are often characteristic.

A radiograph of a dead mole (Talpa europaea), submitted to a veterinary surgeon because of concerns as to whether it was ill-treated when alive and how it might have been killed.

Handling and transportation of samples

It is vital that samples are properly selected, collected and labelled (on the side of the container, not on the lid) and that a "chain of custody" is followed whereby specimens are traceable to the original live or dead animal from which they came. This "chain of custody" also applies to all evidential material.

Presentation of reports and opinions

In order to minimise the risk of ambiguity or confusion, reports should be written in a systematic and professional way and be free of spelling,

Law enforcement officials may need veterinary assistance when birds' eggs are seized. From which species of bird did this come? Was it a protected species? When and where might the egg have been taken?

Practice records should be available for inspection as "hard" copies, not just electronic versions. They are often the equivalent of "contemporaneous notes" and as such important in judicial and disciplinary hearings.

grammatical and typographical errors. In legal cases they must also meet the requirements of the court.

Learning techniques

How can the veterinarian learn or hone these techniques and thereby prepare practice staff to cope better with circumstances where a "forensic" approach might be helpful?

There are helpful sources of information and guidance. Books about veterinary forensic medicine are regularly appearing and a modern practice should have some of these on its shelves. Examples are given at the end of this article. There are also numerous published papers, some in journals such as The Veterinary Record which are readily available to practitioners.

Those with a more serious interest in medicolegal matters will benefit from membership of the Animal

How good is your forensic medicine?

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A roe deer found dead under unusual circumstances about 20 metres from a country road during the close season. Possibly killed accidentally or intentionally by a vehicle but what is the significance of the skin lesion (marked with a scale). A field veterinary investigation requiring forensic skills!

A veterinary practice laboratory: protocols and SOPs designed to avoid transposition of samples and minimise health risks are essential.

Welfare Science, Ethics and Law Veterinary Association (AWSELVA); associate membership of the (human medical) Faculty of Forensic & Legal Medicine (FFLM) (fflm.ac.uk), open to veterinary surgeons, brings with it many advantages and opportunities (Cooper and Cooper, 2021).

To conclude, forensic work entails a combination of meticulous investigation, strict adherence to protocols and standard procedures and a degree of lateral thinking (Cooper and Cooper, 2016). In our lectures we say that when dealing with a potential legal case, your "Achilles heel is your system", not your opinion.titioners.

References and further reading

Cooper, J. E. and Cooper, M. E. (2007) Introduction to Veterinary and Comparative Forensic Medicine. Blackwell, Oxford.

Cooper, J. E. and Cooper, M. E. (2013) Wildlife Forensic Investigation: Principles and Practice. Taylor & Francis/CRC Press, Boca Raton, Florida.

Cooper, J. E. and Cooper, M. E. (2016) Forensic investigations in avian medicine. In: Samour, J. S. Avian Medicine. Elsevier.

Cooper, J. E. and Cooper, M. E. (2021) Veterinary involvement in forensic medicine. Veterinary Record 189 (6): 249-250.

Huffman, J. E. and Wallace, J. R. (2013) Eds. Wildlife Forensics. Methods and Applications. Wiley Blackwell, Oxford.

Merck, M. D. (2007) Veterinary Forensics. Animal Cruelty Investigations.

Blackwell, Ames. Munro, R. and Munro, H. (2008) Animal Abuse and Unlawful Killings. Elsevier, London.

Munro, H. M. C. and Thrusfield, M. V. (2001) "Battered pets": features that raise suspicion of non-accidental injury. Journal of Small Animal Practice 42: 218-226.

Underkoffler, S. C. and Adams, H. R. (2021) Eds Wildlife Biodiversity Conservation: Multidisciplinary and Forensic Approaches. Springer, New York.

A genuine forensic (legal) case: a dead dog, believed to have been starved to death, presented for postmortem examination. Very definitely a red alert on the "traffic lights" approach.

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How good is your forensic medicine?

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Bones found during excavation, requiring identification by a veterinary surgeon.

John E. Cooper, DTVM, FRCPath, FRSB, HonFFFLM, FRCVS, and Margaret E. Cooper, LLB, FLS, HonFFFLM, HonFRCPath, are a husband and wife team: John, who has had a lifelong interest in natural history, trained as a veterinary surgeon and is now a specialist pathologist with particular interests in wildlife and exotic species, tropical diseases and comparative medicine; Margaret is a lawyer who qualified originally as a solicitor and has made the study of animal and conservation law her special interest. They have spent more than 20 years overseas, especially in Africa, including a period in Rwanda with the mountain gorillas. They believe strongly that justice is best served when veterinary surgeons and other experts concerned with animals are properly trained in forensic techniques so that evidence is correctly presented and reports are of maximum value to litigants and courts of law. Greater competence in these respects will promote wildlife conservation, animal welfare, professional standards and the judicial process.

SWFS 2022 Meeting

By: Edgard Espinoza

The National Fish and Wildlife Forensic Laboratory is happy to invite you to the 2022 Meeting of the Society for Wildlife Forensic Sciences to be held in Ashland Oregon from Sunday October 30 through Friday November 4, 2022. We fully understand if you are disappointed because the meeting could not be held in South Africa (and so are we) but we are pleased to offer you a stimulating forensic science meeting, with cutting edge presentations, and a chance to get together with your colleagues from around the world.

There will outstanding keynote speakers, like Shane Mahoney from Conservation Visions, Nancy Foley from the International Conservation Chiefs Academy, and Tianna Williams-Claussen from the Yurok Condor Restoration Program.

Additionally, we are planning several workshops which include:

- Ivory and look alike Identification
- Feather Identification
- Reliability, validation, and report writing for genetics wildlife cases
- STR multiplex panel validation-OdoPlex: features and implementation

We look forward to seeing you at the SWFS 2022 meeting. Updates on abstract submission and registration will be posted at the SWFS website https://www.wildlifeforensicscience.org/swfs-2021-conference/

For questions, please contact ed_espinoza@fws.gov.

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SWFS 2022 Meeting

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	Sunday, 30 October	Monday, 31 October - Halloween	Tuesday, 1 November	Wednesday, 2 November	Thursday, 3 November	Friday, 4 November
8:00		Ivory Identification Workshop National Fish & Wildlife Forensic Laboratory Ed Espinoza, Barry Baker Ashley Spicer	Report Writing Workshop National Fish & Wildlife Forensic Laboratory Kathy Moore, Kim Frazier & Lucy Webster *Report writing* *Round table discussion*	*Odocoileus* Workshop National Fish & Wildlife Forensic Laboratory Brian Hamlin and team	Timber Identification Workshop National Fish & Wildlife Forensic Laboratory Ed Espinoza, Erin Price and team	SWFS 101		
9:00	Ivory Identification Workshop National Fish & Wildlife Forensic Laboratory Ed Espinoza, Barry Baker Ashley Spicer					Keynote: Shane Mahoney Ashland Springs Hotel	Oral Presentations Ashland Springs Hotel Temperate Forest - Europe	Oral Presentations Ashland Springs Hotel Tropical Forest - Africa
10:00						Oral Presentations Ashland Springs Hotel Temperate Forest - North America		
11:00								
12:00								
13:00	Ivory Identification Workshop National Fish & Wildlife Forensic Laboratory Ed Espinoza, Barry Baker Ashley Spicer	Ivory Proficiency Testing National Fish & Wildlife Forensic Laboratory Ed Espinoza, Barry Baker Ashley Spicer	*Odocoileus* Workshop National Fish & Wildlife Forensic Laboratory Brian Hamlin and team	Timber Identification Workshop National Fish & Wildlife Forensic Laboratory Ed Espinoza, Erin Price and team	Plenary: Tiana Williams-Claussen Ashland Springs Hotel	Plenary: Nancy Foley Ashland Springs Hotel
14:00	SWFS Board Meeting	Feather Identification Workshop National Fish & Wildlife Forensic Laboratory Ariel Woodward			Oral Presentations Ashland Springs Hotel Temperate Forest - Africa	Oral Presentations Ashland Springs Hotel Tropical Forest - Indochina & Asia
15:00						
16:00				Mobile Lab Dedication National Fish & Wildlife Forensic Laboratory	Morphology Center Dedication National Fish & Wildlife Forensic Laboratory	SWFS Business Meeting National Fish & Wildlife Forensic Laboratory
17:00						
18:00	Meet & Greet Networking Event				Vendor Reception & Poster Session Ashland Springs Hotel	Banquet Ashland Springs Hotel
19:00						
20:00						
21:00						

Meet the board: Dee Dee Hawk

What's your current position?
Retired from Wyoming Game and Fish Department after 27 years. I held several positions in the Department during my tenure, but I spent the majority of that time as Laboratory Director of the Wildlife Forensic and Fish Health Laboratory and before that, I was the Wildlife Forensic Program Manager.

Can you give me a brief overview of what it is you do in your work?
In the role of Laboratory Director, I was involved with all three aspects of the laboratory: wildlife forensics, fish health and tooth aging. I was responsible for the budget, QA/QC, hiring people and when I had a really good day…..I had the opportunity to do science. I continued to do technical review of forensic cases and assisted with fish health work. As the forensic program manager, I was responsible for case work, quality control, hiring and training technicians, writing reports and training of law enforcement officers. Most of our procedures where molecular based so lots and lots of PCR….

How did you first get involved in Wildlife Forensics?
That is an interesting story…I literally just got lucky. I was working as a forensic chemist at the

Meet the board: Dee Dee Hawk

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Wyoming Public Health lab doing drug of abuse testing for Probation and Parole but was commuting two hours a day. I wanted to find a position in hometown of Laramie. I applied for a fish health position in the lab. I didn't get that job; however, they were in the process of starting a forensic program. The current lab director asked me to come back and apply once they got it all worked out. Six months later he called me and let me know the forensic position was posted. I applied and got the position. While there was no program in place when I started, I had a lot of support to do it correctly and bring online testing that was needed most for the resources of the state. After some trial and error and getting a great team onboard, a wildlife forensic program was born in the Wyoming Game and Fish Department.

What has surprised you most about working in Wildlife Forensics?
The dedication of wildlife professionals around the globe. Almost all are very passionate about their work and have a work ethic that is second to none. That included the law enforcement personnel that were working directly with the victims, the evidence and the suspects through the scientists and even the judicial system. You just don't see that type of passion and work ethic in very many fields. Almost everyone I worked with in wildlife forensics during that nearly three decades enjoyed their jobs and liked going to work…very cool.

What do you find most challenging about Wildlife Forensics?
There are several challenges but over the last 25+ years, I think one the biggest challenge was getting some consistency between laboratories around the world. This challenge is compounded by the fact that no two laboratories do the exact same work. However, putting together some standards and guidelines that applied to all laboratories was something that was doable. The Society for Wildlife Forensic Science was born out of need to have some framework and a venue for people in our community to work together. Standards and guidelines were one of the first goals of SWFS when it came into creation. It took years but a very solid list of standards and guidelines are available in several languages. The new audit process for the standards is also an attempt to help laboratories increase the quality of work and add credibility to results/reports from laboratories following the standards. A formal certification program was also a large challenge, but SWFS members and the board was up for the opportunity. Certification rolls best practices, proficiency and case work into a comprehensive review of an analyst.

What would you say most motivates you to do what you do?
Science is one of my greatest passions, I enjoy the challenge, even the frustration is appreciated when at the end of the day you can put the three sides of the triangle together… linking the victim, the suspect and the crime scene. While there are many different kinds of science, and I have tried several, wildlife forensic and even fish health is interesting and solving a puzzle is fun. No two days are the same in this discipline. And as I mentioned before, the team I had the opportunity to work with at the Wyoming Game and Fish was second to none. The wildlife forensic community I worked with daily as a board member is inspirational, and it made it easy to stay motivated.

What were you doing before you began your current position?
I was a forensic chemist doing drug testing for probation and parole. Spent a lot of time in court testifying for the state against some very unsavory individuals.

Tell me about someone who has influenced your decision to work in Wildlife Forensics?
Dr. Ed Espinoza of course! When I first started working for the Wyoming Game and Fish Department, there was no program. I was hired to start the program with little guidance except "Go forth and do good things"…. So the best place to start training is with the experts. I traveled to Ashland to train that first year and meet Ed. His dedication to science and forensics was amazing and set the stage for me to get our program up and running. One of the best things about wildlife forensic scientists is the camaraderie and the desire to elevate the whole field. You can call a wildlife forensic scientist anywhere in the world with a problem, and they will be there to help. There is

Meet the board: Dee Dee Hawk

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much more a "team" feel in wildlife as opposed to a more competitive field in human forensics. Everyone in Ashland was great to work with and everyone wanted to help me get the lab in Wyoming up and running.

Where did you grow up?
I grew up in Newcastle, WY. A very small community in the foothills of the Black Hills in NE Wyoming. Small Town Wyoming is hard to beat as a kid, you know everyone walking down the street. It is a very friendly community, and my parents still live there so I visit often.

What might someone be surprised to know about you?
I was a high school Rodeo Queen in Newcastle and if I wasn't a forensic scientist, I would have been a wildlife photographer or a NASCAR driver.

What's next for you in your work? What are you looking forward to?
Currently I work ¾ time for the construction company that I own with my husband. I hope to be fully retired in a couple of years and then I look forward to spending more time with family, friends and lots more time on the mountain; and training some bird dogs.

What would you tell someone who is thinking about starting a career in Wildlife Forensics?
It is going to take a lot of work and effort and while it is not an easy career to get into, the rewards are amazing, the people you work with are the best and you will never, ever be bored. It is worth the work and time.

What do you do when you aren't working?
Playing on the mountain and playing with the dogs.

Madelaine Verbeek is a contractor with Lynker Technologies

By: Madelaine Verbeek

Madelaine Verbeek is a contractor with Lynker Technologies, currently based at the Northwest Fisheries Science Center as a Marine Forensic Geneticist at their Charleston campus. Madelaine assists Kathy Moore and Trey Knott in the lab, conducting basic research, compiling data from genetic repositories, sequencing voucher specimens, and validating new methods. She is a graduate of New College of Florida, where she earned her BS in Ecology, Evolution, and Biodiversity before obtaining her MS from the University of Florida in Wildlife Forensics and Conservation. Additionally, while attending UF, she earned an Associate's Degree in Biotechnology from State College of Florida. Madeline has also conducted fieldwork across the globe as a biologist, worked for the Florida Museum of Natural History as an Environmental Archaeology Collections Assistant, and was a Genome Guardian Fellow with Conservation X Labs. In her free time outside of her professional work and studies, Madeline enjoys searching for and identifying fossils and spending time with her dog. As a recent hire, she is eager to learn, acquire new skills and grow in this position and field.

SWFS Workshop - Fall 2022 - Ashland, Oregon, USA

Validation & Application of STR Panels

By: Brian Hamlin and Erin Meredith

The STR Panels OdoPlex and UrsaPlex will be the focus. STR marker selection, screening, multiplex optimization, validation, allelic ladder development, population genetic analysis, species identification, geographic assignment, databases, inbreeding coefficient estimates, including match probability and likelihood ratio calculations will be discussed.

Validation of the OdoPlex and UrsaPlex STR Panels, including a discussion of Best Practices recommended by SWFS Standards & Guidelines for wildlife forensic analysis, the ISFG recommendations for non-human (animal) DNA in forensic genetic investigations, and USA based SWGDAM, Scientific Working Group on DNA Analysis Methods, Validation Guidelines for DNA Analysis Methods.

OdoPlex: An STR multiplex panel optimized and validated for forensic identification and sex determination of North American mule deer (Odocoileus hemionus) and white-tailed deer (Odocoileus virginianus)

UrsaPlex: An STR multiplex for forensic identification of North American black bear (Ursus americanus)

Workshop to include discussion and exercises relevant to practitioners conducting casework involving deer of the genus Odocoileus and bears of the genus Ursus in North America (NA). Methods for species-level assignment and calculation of single-source likelihood ratios will be covered.

Relevant to analysts who wish to or currently participate in the current SWFS proficiency testing scheme for mammals; which includes NA white-tailed deer (Odocoileus virginianus) and mule deer (O. hemionus), NA Black bear (Ursus americanus), and NA elk (Cervus canadensis).

Discussion of Method Development and Validation will have global application and not be limited to NA species.

Interested in a collaborative effort to develop rangewide STR and mtDNA control region databases for deer of the genus Odocoileus? Contact brian_hamlin@fws.gov or erin.meredith@wildlife.ca.gov for more information

Recent publications:

In this section we provide a list of recent wildlife forensic publications pulled from web of science. This list covers the period from September 2021 to April 2022. We are not commenting on their quality or advocating their application, hopefully you will have you own opinions on this. If you know we have missed something, particularly one of your papers, please let us know and we will include it in the next edition.

Zhang M. Forensic imaging: a powerful tool in modern forensic investigation. Forensic Sciences Research. 2021. Available from: https://doi.org/10.1080/20961790.2021.2008705

Price ER, Miles-Bunch IA, Gasson PE, Lancaster CA. Pterocarpus wood identification by independent and complementary analysis of DART-TOFMS, microscopic anatomy, and fluorescence spectrometry. Iawa Journal. 2021;42(4):397-418. Available from: https://doi.org/ 10.1163/22941932-bja10064

Masters S, Anthoons B, Madesis P, Saroja SG, Schermer M, Gerritsen W, Karahan A, Verdoes R, Schwallier R, van Andel T, de Boer H, Gravendeel B. Quantifying an online wildlife trade using a web crawler. Biodiversity and Conservation. 2022. Available from: https://doi.org/10.1007/s10531-022-02367-z

Meng FM, Han H, Wang M, Jiang YS, Pi ZY, Qu YH, Liu ZY, Cai JF. Characterized Gene Repertoires and Functional Gene Reference for Forensic Entomology: Genomic and Developmental Transcriptomic Analysis of Aldrichina grahami (Diptera: Calliphoridae). Journal of Medical Entomology. 2022:tjac004. Available from: https://doi.org/10.1093/jme/tjac004

Valverde I, Espin S, Gomez-Ramirez P, Sanchez-Virosta P, Garcia-Fernandez AJ, Berny P. Developing a European network of analytical laboratories and government institutions to prevent poisoning of raptors. Environmental Monitoring and Assessment. 2022;194(2):113. Available from: https://doi.org/10.1007/s10661-021-09719-2

Morissette O, Whitledge GW. Listening with the invasive fish ear: applications and innovations of otolith chemistry analysis in invasive fish biology. Environmental Biology of Fishes. 2022;105(2):327-43. Available from: https://10.1007/s10641-022-01217-9

Ovesen AB, Nordmo TAS, Johansen HD, Riegler MA, Halvorsen P, Johansen D. File System Support for Privacy-Preserving Analysis and Forensics in Low-Bandwidth Edge Environments.
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