



Wildlife Crime and Forensics

(Bridging the Gap between Prosecution and Conviction of Wildlife Criminals)

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Abstract

Rich biodiversity is an asset to any nation but the increasing momentum of organized wildlife crime, the loss of biodiversity reaching towards extinction of many species and protecting the world's endangered wildlife is a major challenge for law enforcement agencies nowadays. Wildlife Crime is a highly lucrative crime and least risk with zero investment crime. Even if, the perpetrators are caught, the penalties are very light. Real victims are speechless being to defend itself, here major responsibility of conservation comes on State, which is always feel resource-less at many fronts. One such front is evidence; oral evidence is never available here as real victim here a non-human species which is speechless. Here, other evidences play a major role to tackle such crime at prosecution level effectively. Ineffective evidence collection in investigation, due to many reasons, is shackling efforts to identify wildlife criminals. First and the foremost requirement in many wildlife crime investigations are to identify the species and its geographical location which can be done by any expert witness or professional. As there are different types of crime scene example any corpus of wildlife animal found at the place other than the actual place of crime or it may be died due to poisoning, electrocution or any other reason. The form of evidence transforms totally after the processing which cannot be easy for frontline operational team to detect it accurately like the brushes made by the fur of mongoose. The courts rely on such careful forensic analysis, evidences and the quality of work undertaken by forensic practitioners for the prosecution.

Keywords: *wildlife, crime, forensic, poaching, investigation*

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"Every contact leaves a trace," the 'Locard's Exchange Principle

Introduction:

Wildlife Crime (WCL) can be considered as a complex and big business crime that often involves multiple actors which operate at different levels, ranging from local poachers or illegal harvester to international and highly organized criminals with highly established global supply chains. WCL is a crucial branch of the law enforcement which not only involves animals but plant and their derivatives. Wildlife crime has ballooned into a multi-billion-dollar industry that has not only caused species extinctions on a mass scale but has also devastated economies, lives, and

livelihoods¹ and are exceeded only by the drugs and arms trades. This industry's illicit profit is a major source of funding for terrorist and militia groups in some part of the World. From poisoning and electrocuting to shooting and snaring animals, poachers go to extreme lengths to feed the international wildlife trade market² are driving dozens of species to the brink of extinction. Many criminal gangs have links to warlords and militias, and an increasing body of evidence suggests animal smuggling is being used to bankroll civil wars. The specific aim of

¹<https://sanctuarynaturefoundation.org/article/for-ensics-vs.-wildlife-crime%3A-a-battle-that-must-be-won>

²<https://www.scienceabc.com/nature/animals/wh-at-is-wildlife-forensics-and-how-does-it-help.html>



this paper is to elucidate role of forensic evidences in WLCat the prosecution level in the Court of law.

Definition of Wildlife Crime:

Wildlife in its literal meaning is wild fauna and flora of a region. The term “wild life” was first used by the famous American Zoologist William Temple Hornaday in his book “*Our Vanishing Wild Life (Its Extermination and Preservation)*” published in 1913. It was only in 1930s that “wildlife,” written as a single word.³ Wildlife according to the Wild Life (Protection) Act, 1972 is ‘any animal, aquatic or land vegetation which form part of any vegetation’⁴, it is a broad definition. When any offence happens against above mentioned life is considered as wildlife crime, but the word ‘wildlife crime’ nowhere mentioned in the Act.

As wildlife protection legislation has evolved from colonial times Forest Act to Constitutional Provisions of conservations to penal liability in Wildlife Act, there has been a subsequent increase in cases appearing in Court. There are so many provisions in legislation still there are sweeping difference in the number of cases registered and actual conviction materialize in such matters. The Wild Life (Protection) Act, 1972 defines different actions and omissions as wildlife crime but as the world become globalised such crimes also turn out to be a globalised crime and it is considered as an organised crime which is fourth largest crime in money value term after crime related to drugs⁵, but our laws still country centric in implementation which need to be transform.

Development of international wildlife law: As wildlife does not abide by boundaries of any country, there has developed a growing body of

international law relevant to wildlife. While the expansion of international wildlife law in the past few decades dwarfs that of the previous wildlife is the Treaty Concerning the Regulation of Salmon Fishing in the Rhine River Basin, signed in 1886 by Germany, Luxembourg, the Netherland and Switzerland. However, it has only been since the 1960s that there has been concerted and sustained global effort to protect and manage wildlife.

International wildlife law is based largely on treaty law; the other source of public international law is what is known as ‘customary law’. Moreover, the treaty-making process often times codifies then- existing customary law. Customary law, however, is not directed by a supreme sovereign. Instead, it originates from universally recognized practice. Treaties, on the other hand, are similar to contracts between individuals but are nation-states. They can be between two nations or between several.

Wildlife treaties fall into three main categories:

I -Treaties limited to a specific species or related species.

II - Treaties focus on wildlife of a limited geographical area.

III – Some treaties attempt to address the regulation wildlife on a much broader scope without limitation of species or location and it is the most important which is not specific for species or geographical region.

These treaties, however, are not unlimited in their scope. CITES is legally binding agreement still it is a part of soft law, so nations are not bound to meet its different provisions. CITES agreement often referred it as a ‘Magna Carta for Wildlife’.

Under Wildlife (Protection) Act, 1972, the crime which elaborately mentioned is ‘Hunting’. The definition of hunting is quite comprehensive. It not only covers capturing, killing, poisoning, snaring and trapping of wild animal of Schedule except vermin, but also includes every attempt

³Manual WCCB

⁴Section 2(37) of the Wild Life (Protection) Act, 1972

⁵UNODC data



to do so. It also includes 'driving' any wild animal for the above said purposes. Injuring and destroying or taking any part of the body of any such wild animal or in the case of a wild bird or reptile, damaging the egg of such birds or reptiles or ever disturbing the eggs or nests of such birds or reptiles would also amount to hunting. The specified plants which are specified in schedule VI of the Act. Chapter III-A of the Act prohibits wilful picking, uprooting, damaging, destroying, acquiring or collecting any specified plants from any forest land or any area specified.

Importance of Forensic in wildlife crimes:The word "forensic" has its roots in the Latin word "*forenses*" which means a forum. Back in early Rome, a forum referred to a public place where judicial proceedings and debates were held. Thus, the origin and the very definition of 'forensic science' points to its close association with the legal system. Forensic Science involves the collection, preservation, and analysis of evidence suitable for prosecuting an offender in the court of law⁶.

Forensic science is an applied discipline concerned with the controlled use of analytical scientific methods to generate evidence in relation to legal proceedings. The forensic scientist addresses the needs of prosecution or defense investigators, by applying appropriate tools to answer questions that arise during the investigation or prosecution of a case.

The illegal wildlife trade threatens the existence of stable wildlife populations. The underground and covert nature of WLC makes it difficult to enforcement agencies. In such situations use of different genetic tools to identify the origins of wildlife during transport. It increased focus on enforcement in a few areas could help interpose criminal activities and reinstate wildlife populations.

⁶<https://ifflab.org/the-importance-of-forensic-science-in-criminal-investigations-and-justice/>

While tackling such crimes, investigative questions may relate to both the identification of the perpetrators and, importantly, the identification of the wildlife product in trade. The former is the subject of traditional forensic analyses, such as human DNA profiling or ballistics, while the latter is the subject of wildlife forensics. These categorizations are not entirely fixed within the forensic community, but are generally considered the best rule of thumb.

Wildlife Forensics: Wildlife forensics is a field of criminal investigation wherein science is used to identify and examine evidence from crime scenes where animals have been killed, particularly those that are protected by law. Wildlife forensics plays a crucial role in curtailing the wildlife trade and human-wildlife conflict. In cases of WLC the investigations continue to fall short because of poor understanding and faulty handling of evidence, lack of infrastructure, training, support and funding. In India, low conviction rates and poor quantum of judicial punishment make wildlife crime a low-risk-for-high-reward operation. Enforcement agencies are in a continuous arms race with the ever-developing technique of wildlife crime offenders.

In WLC forensic has to play role for both the sides wildlife as well as human e.g. who's the seizure is and for humans- finger print, foot prints etc.. Tackling the illegal wildlife crime requires a well-coordinated, multi-faceted approach, good international cooperation, and the increased use of all the tools and resources available, including forensic applications.

Catching poachers and traffickers, is not enough to tackle such crime but prosecuting and convicting them actually made some change. It becomes important to link the suspect to the crime. The problem is, when any crime happened to any wildlife there is lesser or no chance of having any eye witness. The victim or



its relatives or neighbours are not able to present its side in the court of law. And once the victim leaves the poacher hands, it sliced and diced and processed until it's eventually transformed into any form of products – from food or clothing or high fashion accessories or traditional medicines. Victim's identity is lost, so the chance of conviction. Beside curbing illegal wildlife trade, human wildlife conflict wildlife forensic helps in finding the identity and origin of the species involve in the crime which not only fix the responsibly of the State but increases the admissibly of the evidence collected.

i. Responsibility of State: Ownership is pivotal concept in litigation. If we go back to history we found that the Roman citizen's relationship with wildlife is mentioned in some of the earliest legal writings dating at the time of the Sumerians in ancient Mesopotamia, recognize the ability of humans to own or possess animals. The concept of wildlife as property allows separation between what is mine and what is yours. The Romans divided property into three main categories:

Res publicae- refers to things owned by the State such as road, port, river etc.

Res communes- includes things that belongs to the community like air, running water and the sea.

Res nullis- are things owned by no one such as unoccupied land, property and wildlife.

Things labelled as *res nullius* only belonged to no one as long as no one had taken possession of the item through *Occupatio*. An individual could own wildlife only after physically capturing the animal. If the animal escaped the cage, then it became *res nullius* again, if the animal fell dead on neighbouring property, the property owner maintained the right to prevent a hunter from trespassing.

Roman law saw wildlife in the open as owned by no one until it was captured. English law took a different perspective. Wildlife was considered as

property under English common law, but instead of being owned by no one, it was owned by the King.

Indian wildlife law develop somewhat in between, wildlife is no one's property until sometimemis-happeningoccur to it, as soon as something happens to it, it become government property⁷. Trade is allowed in some cases, but for that there is provision of providing licence from designated authorities of the State or we can say from the Government⁸.

The fundamental principle of criminal liability always points out that there must be a wrongful act combined with a wrongful intention. This principle embodied in the maxim, *actus non facit reum nisi mens sit rea*, means 'an act does not make one guilty unless mind is also legally blameworthy'⁹.The prosecution of individuals for alleged violations required that needed guilt to be established beyond reasonable doubt, a requirement of criminal system. As we know wildlife crime is considered as a victimless crime where the actual victim is not able to put up its case before the court, in such situation the state whose natural resource has been destroyed become a victim. Now, state has responsibility to prove the case beyond reasonable doubt in this criminal justice system, many state machineries plays its role from enforcement agencies to prosecutions to judiciary.

The role of Judiciary and Prosecution is vastlyrelied on enforcement agencies ability of evidence gathering, as actual victim not been able to demand justice for itself. So, enforcement agencies have been playing a very vital role form implementation of wildlife legislation, as different type of evidences and its proper collection are the things on which wildlife litigation based.

⁷Sec

⁸chapter

⁹PSA Pillai Ciminal Law pg 24



ii. Identity: One of the issues routinely faced by enforcement agencies is the definitive identification of wildlife specimens in crime. So, the first and foremost thing which enforcement agencies need to solve is the identity of the seizure because it could be in any form like a shawl, a tooth, a bangle etc. Forensic techniques that identify wildlife, and assist in linking wildlife crimes to the responsible party are invaluable to the justice system. The identification techniques provide by forensic science are even more important in the courtroom. Oftentimes law enforcement has a good idea as to who committed a crime and simple investigative techniques will reveal the most likely suspect. However once that suspect is identified, focus turns to providing enough admissible proof in court so that a conviction can be obtained. The identification of evidence in criminal investigations can be achieved through the application of forensic science.¹⁰

DNA identification has permitted prosecution to quantify facts that in the past were left up to impressions. Proof that meat found in a suspect's freezer matches with 98% certainty a carcass found in the woods removes the factual issue from the table. The Judge only needs to consider whether the law, as applied to the fact that the freezer meat matched the carcass, require that the suspect be found guilty or not. There may be due process problems inherent willingness to accept DNA evidence as infallible without being able to properly weigh the effects of mishandled evidence or improper gathering techniques.

The challenge, primarily, is that findings of the Court are erroneous in law and on the facts of the case. According to the accused-appellants, the prosecution has not been able to establish the guilt **beyond reasonable doubt**. A typical

¹⁰A review of wildlife forensic science and laboratory capacity to support the implementation and enforcement of CITES(U1)

case of circumstantial evidence and the entire challenge to the concurrent judgments is based on the facts that the chain of events has not been completely proved by the prosecution beyond reasonable doubt. Thus, the accused is entitled to the benefit of doubt on the facts.

Identifying the victim and allowing the evidence to speak, it connects suspects to their illegal actions. Wildlife forensics, like human forensics, uses science to answer a legal question. For wildlife forensic scientists, however, most of the time that legal question is to identify the victim. For wildlife crimes, figuring out *what the victim is* essential to establish that a crime even took place. That's because some species are protected and others are not. For instance, a wool shawl made from Kashmiri goat is legal (*Pashmeena*) but one from Tibetan antelope is not (*Shtoosh*). Traffickers know the differences in the laws so that, when caught, they often claim that the item they smuggled is legal because it's from an unprotected species. Unless an investigator proves otherwise, the suspect goes free. That's where wildlife forensics come in for proving the crime.

Origin: Wildlife forensic scientist has to be ready to answer new type of legal questions as where from they occur. Sometimes that will still mean answering the "what is it" question but for species that are newly protected. Other times, it will mean focusing on a different question, like "where did it come from" when trade is permitted for distinct populations of otherwise protected species, as has happened with the recent one-off sales of elephant ivory from southern African stockpiles, the ability to tell where a sample came from is critical.

Wildlife cannot call the enforcement agencies for the crime which happens to them instead law enforcement agencies, and the wildlife forensic science that support them, give them a voice in court. Forensic evidence fulfils several roles in criminal investigations like a crime has



been committed or establish key elements of a crime, place the suspect in contact with the victim or with the crime scene, establish the identity of persons associated with a crime, exonerate the innocent, assist in establishing the facts of what occurred.

Pangolins, despite being listed in Schedule I of Wildlife (Protection) Act, 1972 continue to be the world's most trafficked mammal. The primary demand for its scales in the making of traditional East Asian medicines has led to an estimated illegal trade worth \$2.5 billion every year. To enforce the appropriate national and international laws and to track the decline of the species, researchers of Zoological Survey of India (ZSI), Kolkata, have now developed tools to tell apart the scales of Indian pangolin (*Maniscrassicaudata*) and Chinese pangolin (*Manis pentadactyla*¹¹). There is a need for the development of state-level facilities to promote the use of wildlife forensics so that the conviction rate can be increased¹². There is also an urgent necessity for international forensics collaboration. It was highlighted when seizures of pangolin scales caught in tonnes in different parts of the world.

Dr Ross McEwing, Technical Director of UK based TRACE Wildlife Forensics Network said that Forensic examination can provide valuable insights into such seizures, increasingly as techniques develop, providing information on their origin, and potentially uncovering incriminating evidence as to who was behind the shipment.¹³ The tiniest amount of DNA is being accurately analysed to identify the origins of old ivory. This technique has the potential to thwart international ivory poachers, by placing the origins of ivory pieces into accurate source

locations, thereby identifying specific areas where ivory poachers are actively operating. Professor Adrian Linacre at Flinders University is part of a team that focuses on developing forensic DNA technology to thwart a thriving global black market in exotic animals – and the significance of this new test working so effectively on such a difficult substance as ivory is especially significant, showing the power and accuracy of this investigation technique. Ivory, which is essentially a form of tooth structure, has only tiny amounts of DNA contained within it¹⁴. In the last several years, technical progress in human forensics – genetic, spectrographic, chemical and analytical – has spilled over into wildlife and plant forensics and research. In 2013, the Convention on International Trade on Endangered Species (CITES) recognized the importance of wildlife forensics. Taking genetic analysis as an example, there are far more DNA identification tests published in the academic literature than there are forensic tests available for law enforcement (one major drawback in present scenario lack of required number of wildlife dedicated forensic labs).

iv. Admissibility: probative Value of wildlife forensic evidence. In law, evidence has probative value if it is sufficiently useful to prove something in a trial (Garner, 2004)¹⁵. Thus, testimonial evidence (i.e., testimony by a witness under oath) that is not probative is immaterial and not admissible or will be stricken from the record by defence's objections. Similarly, the analysis of forensic evidence must be relevant to have probative value; it must establish evidentiary facts to be beneficial. The forensic evidence has probative value because evidentiary facts have been established. DNA

¹¹<https://www.thehindu.com/sci-tech/science/wildlife-forensics-helps-cause-of-pangolins/article34515874.ece>

¹²<https://india.mongabay.com/2020/05/lockdown-slows-wildlife-forensics/>

¹³Id.

¹⁴<https://www.technologynetworks.com/applied-sciences/news/ivory-poachers-targeted-by-forensic-dna-sleuthing-342034>

¹⁵The Role and Impact of Forensic Evidence in the Criminal Justice System Final Report December 13, 2010 Prepared by Tom McEwen, PhD.



and fingerprinting was perceived as the two most accurate forensic techniques.¹⁶

In addition to forensic evidence, there are other types of evidence that could be presented during a case. Of particular interest is how forensic evidence is perceived compared to eyewitness testimony. Numerous studies have demonstrated that jurors perceive both eyewitness testimony and forensic evidence. Forensic evidence to be strong forms of evidence for trial in decision-making.¹⁷ Detection of crime can be done sometimes on the basis of a simple forensic test, in which a small piece of lung tissue of the found corpus is set in a glass of water if the tissue floats, the animal did not drown. It may have been poisoned, poached and then thrown into the well, opening up another line of investigation. But if the lung sinks, it means the animal did indeed drown. But the process of drowning itself is not as simple there is, more complex sequence of events that eventually culminates in death for the animal.¹⁸

The review, prepared by the Society for Wildlife Forensic Science and the United Nations Office on Drugs and Crime, tallied 110 questionnaire responses from 39 countries. The investigators found that only one-third of labs cooperated internationally, only one half operated according to any quality assurance standard, only one-quarter reported being involved in actual legal cases, and only six wildlife forensic labs in the world have been audited by any external accrediting agency.¹⁹

¹⁶*The importance of forensic evidence for decisions on criminal guilt Shichun Ling a,1,*, Jacob Kaplan b,1, Colleen M. Berryessa*

¹⁷Id.

¹⁸<https://www.hindustantimes.com/cities/mumbai-news/incidents-of-wild-animals-drowning-in-wells-is-a-matter-of-concern-for-experts-activists-101621707778667.html>

¹⁹<https://www.theguardian.com/environment/2016/nov/09/how-forensics-are-aiding-the-fight-against-illegal-wildlife-trade>

Wild animals can be difficult to spot because of their instinctive behaviour to avoid humans. However, the presence of wild animals often can be determined by their pugmarks in snow, sand, or soft mud. Whenever an animal moves through the jungle over a suitable ground, leaves mark or impressions it called as pugmarks (paw marks). In simple terms, pugmarks refer to the footprints of almost all the animals. Every individual animal species have distinct pugmarks and numerous features contained in it can be used to support the identification of an animal. Many people have learned to read wildlife pugmarks with a remarkable skill for hunting purposes. In wildlife forensic, pug marks have significant importance and considered as valuable evidence. These pugmarks are easy to discover indirect evidence of an animal presence. The keen observation of these pugmarks can tell a lot about the animal's sex, age, size, health conditions, and the time and direction in which the animal had moved. The scientific examination, identification, and comparison of pug marks from crime scenes can link with a suspect and a victim.²⁰

As illegal wildlife trade continues to gain attention across the globe as a serious crime synonymous with other high-value organised crime types, the importance of evidence to secure effective prosecution is ever vital. Wildlife forensic expertise in Asia and Africa has grown considerably in recent years through coordinated approaches and established networks of capacity. Routine events such as these, help reinforce the enabling factors required for forensic applications to support law enforcement efforts by creating trust-based relationships between laboratories and enforcement units, standardising lab procedures and harmonising protocols, sharing best

²⁰<https://legaldesire.com/importance-of-pugmarks-in-wildlife-forensics/>



practices to improve reliability and speed of results, and driving solution-based innovation.²¹

Forensics experts play vital role to in the investigative process, in the collaborativework from around the world to deliver the right forensic tools to support investigations and prosecution in transnational wildlife cases.²² The wildlife forensics tool, has the potential to be used to monitor and study the distribution and migration of animals and birds, including endangered species asworld over the case registered. For such issues we need to amend the legislation which only criminalises only few species which mentioned in different schedule.

The technology came into the spotlight after it was used to establish the species identity in the sensational blackbuck poaching.Veterinary and wildlife experts point out that it can also come in handy for forest officials in managing man-animal conflicts by quickly identifying elusive animals haunting human settlements.²³

Wildlife crime is not confined to a region or to a country but it is an organized crime where several people are involved — from local hunters to the end buyers. This calls for an urgent need to employ advance forensic techniques of international standards to improve conviction rate which at present remains very low.²⁴

²¹<https://www.traffic.org/news/from-forests-to-forensics/>

²²<https://www.traffic.org/news/forensics-expertise-brought-to-bear-on-international-wildlife-trade/>

²³<https://www.thehindu.com/news/national/kerala/new-forensic-tool-to-crack-wildlife-crime/article24547838.ece>

²⁴<https://www.thehindu.com/news/national/other-states/dna-forensics-a-vital-tool-in-cracking-wildlife-crimes/article26358466.ece>

Human Wildlife Conflict sometimes become reason for the wildlife crime. A case happen where a mother leopard and her two cubs were found dead in Belavadi Industrial Area, about 12 km from Mysuru city in Karnataka. Forest officials who conducted a necropsy on the carcasses suspect that the deaths could be due to suspected poisoning by unknown persons. To ascertain the exact cause of death of the leopard family, samples of the carcasses to the Forensic Science Laboratory (FSL) in Bengaluru for further tests. Official informed that it was a clear case of unnatural death of a leopard family and that only be ascertain by the lab tests that what was the exact cause of the death.In the vicinity of the carcasses, the officials came across a half-eaten carcass of a dog on which the mother leopard and her cubs might have fed. The suspicion arouse that some unidentified persons might have mixed poison in the dog carcass and lured the leopards to feast on it, which killed them²⁵.The difficulty with wildlife crimes is that they often occur in remote areas, so there is rarely a witness. This means that it is even more crucial to recover physical evidence by using robust forensic techniques. If there are no realistic prospects that a case will be successfully prosecuted, because this evidence is lacking, it won't be taken to court.²⁶The need for better evidence from a crime scene, to link suspects to wildlife crimes, has led to the rapid development of a field known as wildlife forensics – DNA sequencing and fingerprint analyses are now the weapon of choice in the fight against wildlife crime.

For proper testing there is need of State-of-Art forensic labs with all required facilities but the reality is just opposite many states do not have forensic labs, so the forest department in a bid

²⁵<https://www.thenewsminute.com/article/leopard-her-two-cubs-die-suspected-poisoning-near-mysuru-149345>

²⁶<https://www.bbc.com/future/article/20190920-the-fight-to-end-wildlife-crime-and-poaching>



to ascertain the exact cause of the deaths of wild animals, approach to forensic labs situated at other states. The samples which send to others states is not feasible as many samples fail accuracy test due to the time lapse.²⁷ Alluding to the growing threat from wildlife criminals to the protected species, we need to present irrefutable evidences in the court of law, which can come from forensic sciences²⁸. Although, Karnataka High Court recently has issued interim directions to improve the working of Forensic Science Laboratories (FSLs) across the state. The directions include that new sections like advanced digital forensic, explosives, wildlife forensics and other sections should be established and made operational in the State Forensic Science Laboratory and at Regional Forensic Science Laboratories²⁹.

It will be noticed that under the Indian Evidence Act, 1872, the word 'admissibility' has very rarely been used. The emphasis is on relevant facts. In a way relevancy and admissibility have been virtually equated under the Indian Evidence Act. But one thing is clear that evidence of finger print expert is not substantive evidence. Such evidence can only be used to corroborate some items of substantive evidence which are otherwise on record. While appreciating circumstantial evidence, the Court must adopt a cautious approach as circumstantial evidence is "inferential evidence" and proof in such a case is derivable by inference from circumstances.³⁰

²⁷http://timesofindia.indiatimes.com/articleshow/70563756.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

²⁸<https://www.firstpost.com/tech/science/global-wildlife-forensics-e-conference-ends-draws-attention-to-wildlife-crime-biotech-solutions-8987911.html>

²⁹<https://www.thenewsminute.com/article/k-taka-hc-issues-direction-govt-over-forensic-labs-directs-top-posts-be-filled-154193>

³⁰Musheer Khan @ Badshah Khan v. State of Madhya Pradesh (2010)

In criminal justice system eyewitness testimony is considered one of the most convincing evidence presented to the court and has historically been considered the gold standard, been considered one of the most convincing types of evidence. Eyewitness testimony and forensic evidence both have significant effects on the level of confidence in guilt, with forensic evidence eliciting higher levels of confidence. Moreover, these effects were even larger for more serious crimes, suggesting that the presence of DNA evidence may lead to court certainty in guilty verdicts if presented in trials involving more severe or harmful offenses.

The apex court of India has also confirmed the importance of circumstantial evidence by regarding it more reliable than an eye witness and that the basic principle of circumstantial evidence is that it should be consistent with the guilt of the accused and inconsistent with innocence of the accused. It is a settled principle of law that doctrine of circumstantial evidence is brought into aid where there are no witnesses to give eye version of the occurrence and it is for the prosecution to establish complete chain of circumstances and events leading to a definite conclusion that will point towards the involvement and guilt of the accused.³¹

Expert opinion evidence is no way an exception to it being opinion of a third person inadmissible as a general rule, but for Sections 45-51 Evidence Act. The prerequisite from Section 45 Evidence Act is that the witness must be an Expert in the field. Expertise the person who specifically or especially skilled or practiced on any subject. Expert evidence is thus the direct evidence of an expert in the field from what he perceived by the senses of perception or in any other manner. According to Russell- any person who is skilled or has adequate knowledge in a particular field is called Expert. The forensic science is included in the Indian Evidence Act, 1872, and regarded as expert evidence. An

³¹Sanatan v. State of West Bengal, 2010 Cr.L.J. 3871



expert is an individual who has extensive learning about a subject and the learning can be used to give expert judgment concerning the criminal case.³²

Relevant provisions of dealing with opinion of expert:Section 45 of the Evidence Act, speaks that- for the Court to form an opinion the opinion of an expert is relevant. This section is thus an exception to the general rule as regards exclusion of opinion evidence. Section 51 says that whenever the opinion of any living person is relevant, the grounds on which such opinion is based are also relevant. Section 46 makes facts, not otherwise relevant, are relevant- If they support or are inconsistent with the opinions of experts, when such opinions are relevant. Regarding opinion evidence-the other relevant sections are Sections.47-50, 73 & 67, among which, Section.50-speaks of relevancy of opinion on relationship- for the Court to form an opinion.

Section.49-speaks of relevancy of opinion on usages and tenets of any body of men or family for the Court to form an opinion. Section.48-speaks of relevancy of opinion on existence of custom or right general or relating to a considerable class of persons- for the Court to form an opinion. Sections-47, 73 & 67 speak on handwriting opinion evidence and proof. Section.67-speaks of requirement of proof of handwriting of person alleged to have signed or written the document in question- for the Court to appreciate the evidence.

Section.47-speaks of relevancy of opinion of person acquainted with the handwriting of the person-by whom any document was written or signed-in question-for the Court to form an opinion. The acquaintance may be from-he has seen when that person writes or he has received the documents purporting to be written by that person or when in the ordinary course of business the documents purporting to be

written by that person have been habitually submitted to him.

Section.73-deals with Comparison of signature, writing or seal with admitted or proved ones reads that. In order to ascertain whether a signature, writing or seal is that of the person by whom it purports to have been written or made, any signature, writing or seal admitted or proved to the satisfaction of the Court to have been written or made by that person may be compared with the one which is to be proved, although that signature, writing or seal has not been produced or proved for any other purpose.

The amended provisions in reference to the above for electronic evidence are covered by Section-47-A-opinion as to digital signature, Section-67-A proof as to digital signatures, Section-73-A proof as to verification of digital signatures which are (not to mention about Sections-65-A,65-B,81-A,85-A,85-B,85-C,88-A,90-A&22-A) relating to electronic records.

Sections 45-51 nowhere speak of requirement of corroboration to the opinion evidence. Section 134 Evidence Act-says no particular number of witnesses shall in any case be required for the proof of any fact. Thus coming to relevancy and evidentiary value of expert opinion and evidence, the Latin general maxim is that-*experto- crede* to mean an Expert is to be generally believed. It is because the testimony of an expert as to general scientific facts and doctrines- which are unintelligible to the laymen, will serve to elucidate the facts in issue. However the general rule is that the evidence of an expert has to be tested as any other evidence. Thus the privilege of drawing inferences including in case of expert opinion evidence is given to the Courts to appreciate with reference to facts and circumstances of the case and from other evidence available on record for overall appreciation to arrive a right conclusion on a fact is proved or not proved or disproved.

³²Pragati Ghosh, (2018)



The cases in which testimony of an expert is admissible are of two types:

1). When the conclusions to be drawn by the Court depends upon the existence of facts which are not of common knowledge and which are peculiarly within the special knowledge of men whose experience and study enables them to speak with authority upon the subjects in question.

2). When the conclusions to be drawn by the Court depends both upon the facts stated as well as the knowledge of the facts themselves not within the range of ordinary intelligence. In the first class of cases the facts are to be stated by the expert and the conclusion is to be drawn by the Court. In the second class of cases the expert states the facts and give his conclusions in the form of opinion which may be accepted or rejected by the Court from appreciation of evidence.

The credibility of the expert witness and his competency to give opinion and the reasons given supporting it are the material aspects in the appreciation of evidence by the Court concerned:

(i) The test to determine competency of an expert is: Educational background in the field; Practical knowledge in the field; Careful analysis in arriving to the conclusion opined & Ability to explain the expertise and how he arrived to the conclusion opined.

(ii) The test to determine credibility of an expert is: Basis of opinion- The opinion must be based on facts and reasons there from to support the conclusion. How far to rely there from is a matter of appreciation in evidence by the Court. The expert furnishes the data with reasons to his opinion there from and the Court decides there from and from other material in evidence if any.

(iii) The correct approach for the Court would be to weigh the reasons on which the expert report

is based and the quality of expert's opinion would ultimately depend upon the soundness of the reasons on which it is founded-held in *Umakant Bajpayee vs. State of UP*³³.

In *Mohd. Vs. State of U.P.*³⁴ the Apex Court held that where the expert had given no reasons in support of his opinion, nor was it shown that he possesses special skill, knowledge and experience in the science of identification of finger prints, it is unsafe to rely on such unreasoned opinion, even it is a developed science and the report is otherwise admissible and relevant-u/s.45 Evidence Act. In *Anwaruddin Vs. Shakoor* at para-10 and also in *Darsan Singh Vs. State of Haryana* it was held that where the expert evidence is obscure and oscillating, it is not proper to discredit eye witness evidence even it is not consistent to the expert evidence.

In *Jaspal Singh vs. State of Punjab*³⁵ it was held that the science of identifying thumb impressions is an exact science and does not admit of any mistake or doubts.

In *Emperor vs. Virammal*³⁶, *Harendranath Sen. vs. Emperor*³⁷ & *Fakir vs. Emperor*³⁸ it was held that it is going too far to say that Courts must insist corroboration to the expert opinion evidence on finger and thumb impressions, but for saying the Courts have to evaluate on the evidence and come to its conclusions in appreciation instead of acting on the opinions by taking it for granted. Conviction can even be based on it without corroboration where it point outs that the marks of the accused and at the scene of offence are tallied and expert where says that it is impossible to tally many characteristics of any two different persons marks when taken and compared.

³³*Uma kant Bajpayee vs. State of UP*

³⁴*Mohd. Vs. State of U.P.*

³⁵*Jaspal Singh vs. State of Punjab*

³⁶*Emperor vs. Virammal*

³⁷*Harendranath Sen. vs. Emperor*

³⁸*Fakir vs. Emperor*



In **Pathumma vs. Veersha**³⁹ it was held that finger prints offer most positive means of identification as that never changes from cradle to grave and for that matter even plastic surgery cannot change the arches and whorls that graced the fingers and thumbs at birth.

In **Gade Lakshmi Mangaraju @ Ramesh vs. State of AP**⁴⁰ it was held that the presence of fingerprints at the scene of offence is positive evidence. The reliability of an expert opinion may be determined by a court by examining (i) Educational background of expert in the domain field, (ii) Practical knowledge in the subject, (iii) Careful analysis in arriving at the conclusion opined, and (iv) Ability to explain with expertise how he arrived at the given conclusion.⁴¹

In **Ivory Traders and Manufacturers Association vs Union of India**,⁴² the petitioner challenged the provisions banning trade in imported ivory and articles made from this ivory on the ground that it violated their fundamental right to carry on their trade or business guaranteed under Art 19(1)(g) of the Constitution. Rejecting the challenge, the High Court held that the prohibition was justified since the sale of ivory by dealer would encourage poaching and killing of elephants.

The two historic criminal cases namely the Arushi murder⁴³ and Delhi gang rape (the Nirbhaya case)⁴⁴ have been adjudicated by the constitutional courts on the basis of forensic evidence it was held that DNA evidence is now a predominant forensic technique for identifying criminals when biological tissues are left at the

scene of crime or for identifying the source of blood found on any articles or clothes, etc. recovered from the accused or from the witnesses. DNA testing on samples such as saliva, skin, blood, hair or semen not only helps to convict the accused but also serves to exonerate. The sophisticated technology of DNA fingerprinting makes it possible to obtain conclusive results. The Supreme Court reiterated the forensic significance of DNA by saying DNA report deserves to be accepted unless it is absolutely dented and for non-acceptance of the same, it is to be established that there had been no quality control or quality assurance. If the sampling is proper and if there is no evidence as to tampering of samples, the DNA test report is to be accepted.

When the evidences are not collected properly, in such situation also it does not pass the test of reliability in scientific testing and not be able to admissible before the court. This could happen due to many reasons: the staff of Forest Department is not trained that much to collect such type of evidences, Police personnel also have the jurisdiction in such case but they are not trained to collect wildlife cases evidences. Time, climate etc. these factors also play a vital role in wildlife cases.

Limitation of Forensic Science Evidence in WLC:

Mainly in WLC cases where in most of the cases actual palace of crime never been found and others are stay in open for long time due to reporting late or other climatic conditions where that spot exactly is. Footprints can easily be eroded or erased. Hair, teeth, claws etc., start to decay and decompose. In such situations evidence lost its credibility in the courts.

Species identification is only possible if there is information beforehand in the database. Most of the forensic techniques require skilled people, maintaining machinery and a high cost. Since wildlife forensics is not much of a focussed area

³⁹Pathumma vs. Veersha

⁴⁰Gade Lakshmi Mangaraju @ Ramesh vs. State of AP

⁴¹Naveen Krishna Bothireddy v. State of Telangana 2017 INDLAW HYD 582, 2017 CRLJ 3548

⁴²Ivory Traders and Manufacturers Association vs Union of India

⁴³Dr. (Smt.) Nupur Talwar v. State of Uttar Pradesh 2017 SCC On Line All 2222: (2018) 102 ACC 524: (2018) 188 AIC (Sum 26) 11 : MANU/UP/2639/2017.

⁴⁴Mukesh v. State (NCT of Delhi) (2017) 6 SCC 1: 2017 SCC OnLine 533: MANU/DE/3151/ 2014.



for law makers and enforcement machinery, many of the techniques are still not available.

Conclusion:

Biodiversity is life line for the survival of this Earth. Pace of degradation of ecosystem can question the survival of humans as well, climate change is one of its phases. To save the life on this earth we need to conserve the biodiversity and effectively implement different conservation legislation and make effective changes in it according to the changing environment. For saving environment we need to save the biodiversity and tackle wildlife crime effectively. Animals are part of this planet and have their own ecosystem and world in which they are immersed⁴⁵. Wildlife crime continuously growing globally, impacting survival of many species and ecosystem. Conservation of each and every non-human species now need anthropogenic solutions one of those is legal process. Fairness in investigation is precursor to fair trial.

Scientific aids, especially forensic tools enhance transparency, fidelity and accuracy to brace fairness in administration of justice. The aim of investigation is ultimately to search for truth, track the real criminal and to bring offenders before law in recent years, forensic science is fast becoming our strongest ally to stop and stem the illegal wildlife trade. Blending of science with traditional criminal investigation techniques offers new horizons of efficiency in criminal investigation, which reduces dependence upon informers and custodial interrogation and concentrates upon skilled scanning of the crime scene for collection of physical evidence.⁴⁶

However, with millions of cases still pending in courts across India, the need for more forensic labs and qualified forensic professionals is very

⁴⁵<https://scientiamag.org/the-role-of-forensic-science-in-wildlife-crime-investigation/>

⁴⁶(Forensic Law, ILLI by Goswami

high. There is an escalating pressure on law enforcement agencies to collect evidence in a tamper-proof way⁴⁷. As we all know wildlife crime is a victimless crime, the offenders always take benefit of the lack of evidence or proper evidence and admissibility of those evidences before the court. In such situation forensics will play a very vital role, for this it is a mandatory requirement that proper collection of such evidences can be done.

Since forest staff, particularly forest guards, are the first responders at wildlife crime scenes, their actions there determine the case outcome. Lack of appropriate training has led forest staff to repeat the same errors at crime scenes that their predecessors made. To correct this, every state must prepare a training module for evidence collection must be developed and training programmes on evidence handling according to that module; and how to utilise evidence and forensic reports. All trainees will provide kits to avoid crime scene tampering and for collection evidence scientifically. Proper training of stake holders whether it is frontline staff of Forest Department/Police Department or other security agencies like Boarder Security Force, Customs Department etc. is must.

There are very few forensic labs are working such matter, while the crime is worldwide, we need to set up state-of-art forensic labs in every state, which not only reduce the time required for the report but it directly improve the conviction rate in such crime which is very meagre. Forest department must have such type of laboratory at its headquarter in every state so seizures can be sent without any delay to the labs.

It also reduce the burden on the labs which are ancillary play this role, because those labs which are working as a helping hands are scientific labs whose purpose of testing are different like WII(Wildlife Institute of India) or FRI(Forest Research Institute).

⁴⁷ Ibid 1



However, prior to any evidentiary analysis, proper evidentiary collection and crime scene management are critical to the success of any investigation and forensic labs. In addition, trace evidence analysis and interpretation are essential to any forensic investigation and the charge to evaluate the physical evidence collected from crime scene such as ballistic evidence, tool mark, soil etc. Evidence interpretation and more importantly, the communication of this interpretation is paramount to successful convictions of violators.

There may be due process problems inherent in courts willingness to accept DNA evidence as infallible without being able to properly weigh the effects of mishandles evidence or improper gathering techniques. So the courts have the responsibility to test the authenticity of forensic evidences while delivering such judgements. There is a need for the development of state-level facilities to promote the use of wildlife forensics so that the conviction rate can be increased⁴⁸ as well as there is also an urgent need for international forensics collaboration to a better future for wildlife conservation.

Forensics is an umbrella science. Sometimes a single case could encompass several sciences and even non-sciences, such as art, accounting, and architecture. For crimes such as murder and theft, investigators rely greatly on physical evidences from the crime scene, such as cigarette butts, poisons, firearms, and even the victim's body. Along with forensic DNA analysis, this could involve the use of disciplines such as forensic botany, dentistry, toxicology, medicine and ballistics. Recently developed forensic applications include cyber forensics and forensic accounting.

⁴⁸<https://india.mongabay.com/2020/05/lockdown-slows-wildlife-forensics/>



