

WILDLIFE FORENSIC SCIENCE: TRAFFICKING IN PROTECTED SPECIES & FORENSIC APPROACHES IN THE SOLUTION OF WILDLIFE CRIME

Sneha*

ABSTRACT

Wildlife forensics is a growing discipline and includes other game players including the international community, national police organizations, (NGOs), and crime intelligence specialists and medical professionals. Wildlife forensic science is a branch of forensic science that deals with the investigation and analysis of crimes related to wildlife. It involves the application of scientific methods to collect, analyse, and interpret evidence to identify and prosecute criminals involved in wildlife crimes. Additionally, it provides critical evidence to law enforcement agencies in the investigation and prosecution of wildlife crimes. It helps in linking suspects to the crime scene, identifying the weapons and tools used in the commission of the crime, and providing evidence of illegal trade in wildlife products. The annual revenue from the smuggling of ivory and rhino horn between 2016 and 2018 has been estimated at US \$ 400 million (310 - 570) in ivory and US \$ 230 (one hundred and seventy - 280 million) in rhino horn smuggling. Spying tactics that are responsible for enforcing plant and animal law include animal disease, in which people claiming in this system play the same role as their dying partners and determine the cause and time of loss of life; crime detection, comparison and discovery compared with idle fingerprints and animal DNA. Many tools for dealing with serious and organized crime already exist, including the international legal framework provided by UNTOC and UNCAC. This paper focuses on the existing crime and the definition of the element of intelligence science and the smuggling of endangered species.

Keywords: Wildlife, Forensic Science, Illegal Trade, Protected Species, Tools, Technology.

INTRODUCTION

Providing wildlife crime testing around the world is daunting, as each country treats and protects its wildlife, fish, trees, and other species in a variety of ways and the laws of wildlife, fishing and forestry are changing as new traps and plant species emerge. There is no international conference on the definition of wildlife crime, so there is no widely accepted

*CHRIST ACADEMY INSTITUTE OF LAW, BENGALURU.

definition of the term. For the purpose of this report, the term “wildlife crime” refers to the illegal harvesting and trafficking of public law, in particular, but not just compliance with community law in the implementation of CITES schools.

Wildlife forensics is an emerging field driven by the need to focus not only on the health and beauty of wildlife but more importantly, to commit crimes directly targeted by wildlife. The problem involves various players taken from the international community, community policing institutions, NGOs and intelligence experts. For a time one of the major challenges in the world was human trafficking and extinction, estimated at a cost of US \$ 10 - 20 billion at a time, about 5 international drug trafficking. Agencies such as the INTERPOL Wildlife Crime Working Group ([www.interpol.int/public/Environmental Crime / Wildlife](http://www.interpol.int/public/Environmental_Crime_Wildlife)) and Business (Wildlife Trade Monitoring Network (www.traffic.org)), act as partnerships for countries to compile responses. on these vicious smuggling networks.

The work is extensive, and it is estimated that 40 organized crime in Brazil, figuratively speaking, is associated with wildlife; similarly, other countries such as China support, albeit as a difficult application for monetization, trade in the CITES-listed species. In fact, Southeast Asia is considered to be one of the world's largest trading centres. What is clear is that these corrupt networks are interconnected, stretching, and well-organized, using many styles of stopping and selling protected animals around the world. In 2008, as a way to encourage companies against this horrible and lucrative trade, eBay shut down the sale of animals and ivory through its online marketplace. With a collection of evidence proving persecution, intelligence and science experts are registered to identify and exit animals, and to determine the cause and manner of death.

This paper provides an overview of the methods taken by intelligence and science experts relevant to wildlife science research and outlines new approaches to the fascination and trafficking of different species of animals.

KEY QUESTIONS

Forensic intelligence has been described as a spy operation in law. This explanation is helpful because it helps us understand that wisdom is not just the intelligence itself, but the many subtleties of dealing with a particular problem. And it is an extraordinary example of “applied” wisdom. Depending on the nature of the problem, the branch or branch of

intelligence provided, or your combination, is likely to be invalid. With regard to wildlife crime, forensic problems often meet with three key questions-

1. What is this?
2. Where does this come from?
3. How and when did he die?

WILDLIFE TRAFFICKING AND COVID-19

Considering the growing impact of the COVID-19 epidemic on human resilience, global conservation and social protection, understanding the nature of zoonotic conditions and the pitfalls they face and how they can help them - here comes one of the most important questions regarding government data collection and evaluation of this document were completed prior to the COVID-19 epidemic. or the patterns and processes set out in the document easily identify pre-epidemic epidemics, provide a brief overview of natural disasters and propagate the spread and software responses that highlight the importance of tackling and stopping global warming as important ways to reduce the threat of unspecified natural zoonotic pain.

The COVID-19 epidemic and the postmedial harm to mortal and worthwhile life have truly tested the worldwide effect of zoonotic conditions, in which natural world trade - each felony and illegal - is an indistinct vector.

UNODC and its partners are dedicated to expertise on the hyperlink among flora and fauna trafficking and the pitfalls associated with zoonotic conditions, whilst stating that there may be nonetheless plenty of doubt in the vicinity consistent with the arena health organisation, about seventy-five percent of latest or emerging infectious sicknesses that affect human beings over the course of three a long time is from animals while your understanding of both the grievance and the source of the contamination causes it to change swiftly, COVID-19 can be linked to a pathogen plant in wild batons which are suspected of transmitting it to human beings, in a thought-frightening way through a representative.

The impact of the COVID-19 epidemic on buying and selling codes, trafficking in natural resources and the use of wildlife remains in doubt although global travel restrictions and different factors will influence the scale, transport styles and general system of smuggling

groups driving this change, it is many miles away that smuggling of plants and animals will now not decrease dramatically while there may be a few exceptions. Buyers and sellers may redesign and increase their awareness of online trading and related channels.

Additionally, an increase in coddling due to declining tourism and related gains and an increase in stay coddling are real pitfalls. Similarly, flora and fauna merchandise can be known as 'COVID-19' herbs, specifically been and various plant species 'used in traditional Chinese language medicinal drugs.

AFRICAN ELEPHANT TUSKS AND RHINOCEROS HORNS

Ivory comes from elephants, particularly African elephants.¹ There are at least two different ways to estimate the number of poachers hunted in Africa and as a result the rate of illegal ivory being reached on the market each year. Ratings of elephants can be compared all the time and the facts of the poaching can be modelled to quantify the variety of elephants that have been poached:

African rhinos are different from African mammals because they are much smaller, and more focused geographically.² Of all the African rhinos (approximately) about 20 African rhinos, and although it takes 5 international locations to cover the digging of 3 mammoths, seventy-five per cent of the last rhino could be bred in just one South Africa.

South Africa has been so successful in raising rhinos that it has managed to export 538 live rhinos, considering that by 2014, it was feeding wild and growing wildlife in some parts of the world. Drought and overcrowding have caused South African rhinos to decline because 2012 has, however, reduced the number of people worldwide.

POACHING

Like ivory, these days there have been signs of declining application of rhino cornucopia, as both pressure (coddling) and price tips are declining. South Africa, which has endured 86 times in line with the percentage of fraud cases recorded between 2006 and 2017, has seen a decline in its record numbers every time you think of 2014. By 2019, the list of fraud cases dropped to 594, a very small position due to the 2011 reality.

¹ Lyman, R., 1994. *Vertebrate taphonomy*. Cambridge u.a.: Cambridge Univ. Press.

² *International Trade Forum*, 2014. How ITC came back into focus - Interview: J. Denis Bélisle, Executive Director of the ITC, 1994 - 2006. 2014(2), pp.23-23.

PANGOLIN SCALES

For a while, the demand for pangolins in Asia was provided by pangolins from Africa. In both regions, pangolins were killed as a result of meat³ and their scales, which have been used medicinally.⁴ Pangolin products have been used in Chinese language medicine hundreds of times to address various forms of love. The dosages are said to promote blood circulation and boom lactation in pregnant women, at the same time as beef is used as the most widely used alcohol drug in Africa.

In Nigeria, for painting, pangolin corridors are used to treat various body and brain disorders conditions.⁵

All eight species of pangolin are believed to be declining, but since the exact number of people is inaccessible, it is difficult to determine the impact on the conservation of illicit trade. The high rate of fainting, however, raises an uncontrollable harvest, a theory confirmed by Nimrods that was promoted by UNODC at UNODC in Uganda and Cameroon in 2018, which reported that pangolins are becoming increasingly difficult to find.⁶

TRAFFICKING

Human trafficking is carried out by sea, air and land, and parcels are occasionally used. Shipping may not be well hidden, but it was planted under solid flesh and ice, hidden in logs using candle wax⁷ and stuffed inside sword barrels of other goods.⁸ The gross illegal handling of pangolin captain scales can be misinterpreted or hidden under 'covered loads' such as plastic debris.

Cheng, W., Xing, S. and Bonebrake, T., 2017. Recent Pangolin Seizures in China Reveal Priority Areas for Intervention. *Conservation Letters*, 10(6), pp.757-764.

⁴ Cheng, W., Xing, S. and Bonebrake, T., 2017. Recent Pangolin Seizures in China Reveal Priority Areas for Intervention. *Conservation Letters*, 10(6), pp.757-764.

⁵ Soewu, D. and Ayodele, I., 2009. Utilisation of Pangolin (*Manis* spp) in traditional Yorubic medicine in Ijebu province, Ogun State, Nigeria. *Journal of Ethnobiology and Ethnomedicine*, 5(1). Washington, H., Baillie, J., Waterman, C. and Milner-Gulland, E., 2014. A framework for evaluating the effectiveness of conservation attention at the species level. *Oryx*, 49(3), pp.481-491.

⁶ Rodríguez, A. and Calzada, J., 2017. Reassessment of the conservation status of the Iberian lynx *Lynx pardinus* for the IUCN Red List of Threatened Species. *Galemys, Spanish Journal of Mammalogy*, 29, pp.7-18.

⁷ Chiou, F., Hermansen, S. and Høyland, B., 2019. Delegation of committee reports in the European Parliament. *European Union Politics*, 21(2), pp.233-254.

⁸ Tuoi Tre News. 2022. *Vietnam seizes over 6 tonnes of suspected ivory, pangolin scales smuggled from Nigeria*. [online] Available at: <<https://tuoitrenews.vn/news/society/20220114/vietnam-seizes-over-6-tonnes-of-suspected-ivory-pangolin-scales-smuggled-from-nigeria/65222.html>> [Accessed 10 March 2022].

International kidnappings have proved that smugglers use the same methods over and over again, including the common cooling of small scales. The same tactics are repeated, which include known air transfers on small scales for testing for example, the government within the Netherlands took similar parcels of about 20 kg of Nigerian scales in accordance with the package.

Malaysia also seized a series of similarly packaged goods from air carriers from Ghana in 2017.⁹ Some are even smuggled in luggage¹⁰ and shipped in a declared package as wood or other materials.

METHODS IN FORENSIC SCIENCE

The morphological patterns utilized in wildlife forensics are employed commonly for identity and to envision the purpose and manner of loss of life. These styles are grounded on the anatomical identification of napkins or frame rudiments and bear significant know-how of relative deconstruction on the macroscopic and bitsy scale. Generalists comparable to osteologists or veterinarians provide identifications; greater certain histomorphology or histopathological identifications can be handed through quite a number of professionals, relying on the towel type.

OSTEOLOGY

Gross osteology uses a specific appearance or morphology of rudiments of the bone marrow to make predictions. For mortal spies the key question is, Is this mortal? This is a simple and unexpected question with the help of a request for rejection - that is, it dies or ceases to exist; and if not, and there may be an intention to pursue further research. However, animal identification is not very difficult to do because there are many possibilities and variations of internal and internal animal species while the rudimentary bones are complete or partial, bone joints, size and shape of the whole, in addition to dots forming muscle groups that provide character traits (character development) of species. and are numbered inclusively.¹¹ It will therefore be able to identify the details of a single bone based on individual traits. This

⁹Cites.org. 2022. *Wildlife crime enforcement support in West and Central Africa | CITES*. [online] Available at: <<https://cites.org/eng/node/55782>> [Accessed 10 March 2022].

¹⁰Chris Wold, 2014. What Is the Role of Lawyers and Law Students in Preventing the Illegal Trade in Ivory and Rhino Horn?. *Environmental Law and Policy*, 13(null), pp.1-38.

¹¹Lyman, R., 1994. *Vertebrate taphonomy*. Cambridge u.a.: Cambridge Univ. Press.

method is also used to estimate small numbers of individuals present using single cadaverous data such as, say, the right proximal right femur.¹²

MICROSCOPY

When a part is found, identifying the city is possible with the beast's property and there are large books. A helpful Hillier review as well as Bell¹³ reveals the different types of bitsy morphology associated with creatures, and how they differ from each other and from humans. The downside of this program is that at the same time as it is appropriate to use denial coverage to reduce the breadth of opportunities, it is doubtful for Miles to provide an immediate effect on copyright issues. Figuratively speaking speakers, nags, bears, and cattle share a common skeletal muscle among long bones called plexiform bone in different creatures (including humans) now.

NECROPSY

Necropsy is an animal that is found in mortal necropsy and is performed by a trained veterinarian, with little knowledge of pathology. It is classified as morphological style as the ancient anatomical and relies heavily on visual aids, radiography, and microscopy.¹⁴

For natural crimes, autopsies are important where the cause and method of death are determined. In British Columbia, Canada, black bears were caught by traffickers because of one of their bitter stings, and cadavers or their halls were eventually sent to China for immortality to provide normal drug assistance. Using this event, post-mortem testing can determine which organs have been removed and how that animal has changed from being killed depending on the physical condition at the time of death may be performed. This type of information is very important for police investigators and international agencies who try to make local vendors and their styles. There is also significant legal evidence in court.

POLICY IMPLICATIONS

wildlife crime regarding gangs is a major crime. No country has ever been affected by this crime, which impacts biodiversity, human health, social protection and social development,

¹² Wolfram Meier-Augestein Isla & Fraser, forensic isotope analysis leads to identification of a mutilated murder victim, 48

¹³ Maria L. Hillier & Lynne S. Bell, *Differentiating human bone from animal bone: A review of histological methods*, 52

¹⁴ John E. Cooper Margaret E. Cooper, *Forensic veterinary medicine: A rapidly involving discipline* 4

and is indexed within the pockets of prepared crime companies. unlawful trade in the natural world, which by using definition does not exceed appropriate aseptic and phytosanitary controls, may want to result in the spread of zoonoses,

it's miles just like SARS-CoV-2 which triggered the COVID-19 epidemic. handling the range of biodiversity and its thrown items cannot be done without acknowledging the bad effect of organized crime on the arena and corruption, all through the wildlife trafficking collection. As every country may be a source, destination and/or vacation spot U . S. A., every United States has a role to play in helping and dealing with this crime by using evacuation and prevention. Flora and fauna crime, like all organized crime, should be addressed in a balanced way that directs the pillars of electricity, want and corresponding livelihoods.

Like maximum applications, the change in the natural world and flora and fauna products is going online. merciless agencies are increasingly the use of online forums and technologies to shrink the smuggling of natural world products around the sector. Member States must develop the capacity of regulation enforcement organizations to research online flora and fauna agreements, call online packages, acquire powerful certification that consists of the use of virtual forensics, and develop legal enforcement measures. monitoring online trade, and the use of available era to music key characters, patterns and players concerned with illegal buying and selling, is critical to the disintegration of companies that take advantage of online forums. these sweaters should be adaptable so that regulation enforcement businesses can reply quickly whilst, for instance, reptile dealers switch to different online boards after one platform violates illegal exchange.

As each legal and illegal trade becomes more complex, communication between law enforcement and technology platform partners such as Facebook, WhatsApp, Alibaba and WeChat, among other things, will be an important way to save and disrupt illegal change. these forums should direct efforts to regularly monitor special groups of social media platforms and advertising channels.

SPECIAL PROVISION UNDER WILDLIFE PROTECTION ACT 1972

natural world etc. becomes the assets of the nation - In terms of phase 39 (1) (a), (b) & (c) of the Wildlife Act, 1972, wild animals, other than bugs, are hunted, domesticated or domesticated. kept in jail, killed by using a plant, or by accident killed with animal papers, jewellery or raw gems or meat taken from equal animals, ivory imported into India and the

identical ivory composition will be the property of the national government and within the event of a crime finished at a sanctuary or countrywide park declared through the superb authorities that the equal creatures or animal files are the property of the supreme government.

Section 39 (1) (d) says automobile munitions, entice and gear that has been used for committing an offence against this Act are also government belongings. several instances the timber variety officials use this phase to expropriate the motors seized, which is an incorrect practice in the attention of law instances have been also observed where the permitted officer ordered the confiscation of the car on the time of compounding the offences. inside the mild of the current ideally suited courtroom decisions, it could be cited that section 39 (1) (d) could come into play only after a court docket of able governance plant that blameworthiness and allegations made in opposition to the indicted were true and recorded the finding that the seized composition was, as a count number of truths, used in the commission of the offence.¹⁵

CASE STUDY – THE IVORY QUEEN

The UNODC website of SHERLOC contains a high-profile case (“Elephant Queen”) in connection with the sentencing of the ivory smuggling ring followed by Excerpts from the case evidence. The case was reported to the media and the main case was soon dubbed the "Queen of Elephants" which sells public interest in the case and has long been an illegal business (14 times); quantum of plutocrat produced; symbolic event for sale (large ivory); and the fact that the overseas woman, who was in charge of the public office, became the head of these illegal games adding to the prosecution is the fact that the main perpetrator was involved in many public and private conversations during his arrest. He was the vice president of the China-Africa Commercial Enterprise Council and worked in a Chinese restaurant and investment organization in the United Republic of Tanzania. In addition, he was fluent in Swahili, living many times in Tanzania.

¹⁵Original language: English SC65 Doc. convention on ... - cites,, <https://cites.org/sites/default/files/eng/prog/MIKE/SC/E-SC65-42-01_2.pdf>(last visited Mar 10, 2022). 7-11 July 2014; and CITES SC69 Doc 51, Sixty-ninth meeting of the Standing Committee. Geneva (Switzerland), 27 November - 1 December 2017

CONCLUSION

This paper sought to combine several morphological and chemical styles utilized in natural world forensics some are nicely hooked up and offer reliance on many assessments. a few are very tempting but preserve directly to the vow of the future. Wildlife plays a crucial role in maintaining the ecological balance and is essential for human survival. Unfortunately, poaching and illegal trading have led to a significant decline in various flora and fauna species worldwide. To ensure sustainable development and the future well-being of humans, protecting wildlife is crucial. In this context, this article focuses on various techniques used in wildlife forensic science to identify the species and geographic origin of wildlife. These techniques can help curb wildlife crimes and bring to justice those involved in the illegal trading of wildlife, their products, and derivatives. Wildlife forensic science helps in detecting diseases and pathogens in wildlife that can potentially spread to humans. By identifying the source of the outbreak, authorities can take necessary measures to prevent the spread of diseases and protect public health. It provides critical evidence in legal proceedings related to wildlife crimes. It helps in establishing the guilt of the accused and strengthens the case of the prosecution. DNA, which can be addressed in time, will similarly the trouble in this series of proofs, however, it is simply now not a logical end alternatively, new and old scientific strategies stay collectively as a fixed gear for the improvement and improvement of wildlife technology research. Trafficking in people is likewise a component in reducing the value of research into the ivory queen's research.

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Therefore, Wildlife forensic sciences play a critical role in investigating different phases and procedures of wildlife crime, ranging from species identification to establishing a timeline of events. Poaching, illegal trade, and other illicit activities have caused many species to become endangered, making conservation and nature preservation ineffective unless these issues are properly addressed. Humans are an integral part of ecosystems, and the importance of wildlife forensic sciences cannot be overlooked, especially concerning human and animal health (One Health).

A cooperative approach involving health sciences, forensic sciences, nature conservation, and technology can lead to faster resolution of most wildlife and global health crimes. The application of big data analytics and artificial intelligence, already developed and implemented in other fields, can create a well-structured and organized chain of detection, detention, evidence collection, public health surveillance, and communication.

Multidisciplinary teams with diverse professional backgrounds are also vital in extracting and interpreting information from various perspectives. This collaborative effort can help prevent wildlife crimes, disease outbreaks, environmental disasters, and species extinction.

