Technology and Wildlife Crime: An Appraisal in India

Maneesha Mishra, Arpita Mitra

Abstract: ***Technology has proven to be a boon to the world after it has allowed us to virtually visit the diverse ecosystems on Earth. The wildlife diversity in the inaccessible mountain regions, the dense equatorial forests, the treacherous desert environment or the deep oceans is no more a surprise to us. With the world becoming apparently smaller and accessible through technological advancements, transnational crimes have considerably increased. These crimes transcend borders and are difficult to comprehend. Wildlife Crime can be distinctly noted to be on the list of Transnational Crimes which is on the rise on an alarming rate. In India, even after implementation of several laws, wildlife crimes are booming. It is targeting the lives of not only the wildlife but the human beings associated with it. It is therefore important to understand the significance of protection of wildlife. The present doctrinal study seeks to assess the manner in which technology is used as a tool and evaluate the need to adopt better technology to curb wildlife crime in India from government reports taken as primary data.***

Keywords: Poaching, Technology, Transnational Crime, Wildlife Crime, Wildlife Protection.

I. INTRODUCTION

Technological innovation has been the driving force for detection and prevention of crime. It has historically aided the law enforcement personnel in crime prevention. Technology has been used to develop ground breaking strategies to curb crimes essentially transnational crimes. Wildlife Crime is one type of transnational crime which extends beyond borders and is ever increasing. Wildlife crime is often associated with wildlife trade which predominantly follows the pattern of trade from the less developed countries to the more developed ones. Major demands are made for exotic pets and flowers, ivory, and animal products for use in traditional medicines[1]. These products are a worth of billions of dollars globally and its network is difficult to detect. Such illicit trade is spoiling decades of conservation work, development and security of the countries in the world. However, new technologies are being developed each day with enhanced features to combat wildlife crime[2].

II. TECHNOLOGY AND WILDLIFE CRIME: A BRIEF EXPLANATION

Technology is a body of knowledge devoted to creating tools, processing actions and the extracting of materials. Though technology is the use of science to resolve problems, it is essential to understand that technology and science are different subjects which work together to achieve specific tasks or resolve definite problems[3].

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Wildlife includes all the variety of flora and fauna on Earth, as defined by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Practically, wildlife crime poaching along with includes large scale illegal trade of wild animals, birds and timber along with trade facilities for other animal products which amounts up to billions in the international market. “This transnational illegal trade is complicated by the participation of a range of criminal actors.” [4]. Thus, it is difficult task for the law enforcement to monitor the pathway of trade or arrest the perpetrator. To track the path of trade, specific technology should be developed or existing technologies should be modified to generate better results.

III. TECHNOLOGICAL ASSISTANCE FOR COMBATING WILDLIFE CRIME: THE GLOBAL SCENARIO

Combating wildlife crime has turned into a global responsibility. The crisis of this transnational crime is so huge that it has been found to be in link with other crimes such as corruption, drug trade and armed conflict. Illegal wildlife trade often involves influential people and is often viewed as a low risk activity. The major problem faced in protecting the wildlife is not only dangerous but life threatening. Sanctuary or National Park Rangers or forest officials often lack high skilled training or antiquated weapon to fend of the criminals. They often risk their lives in confronting the poachers, get severely wounded and are even killed[5]

Apart from using radar to detect the metal snares that entrap wildlife and acoustic sensors to detect gunshots, technologies need to be devised to assist in detection and prevention of wildlife crime and even ward off the dangers to life of the protectors of the wildlife. DNA analysis is one such technology that has proved to be a turning point in wildlife crime investigation. Initiated by Samuel Wasser[6] (2015), DNA analysis of ivory when compared with DNA-mapping of elephant populations, permits investigators to mark the origins of illicit ivory and focus on enforcement on high risk areas. Acoustic traps is another innovative and ingenious method used by the Rainforest Connection to track illegal logging in Borneo. Rainforest Connection is a technological startup, founded in the United States which builds “scalable, open source solutions to poaching and illegal logging”[7]. It uses networks of recycled cell phone outfitted with solar panels and antennas acting as sensors. Some other advancements include Thermal Imaging, Advanced Analytics and Mapping, Digital Radio, GPS enabled Cameras and Smartphones, Virtual Watch rooms,

Spatial Monitoring and Reporting Tool(SMART) and Cybertracker. "SMART includes a powerful software application that improves the ability of the protected areas agencies and other ranger based programmes to combat poaching and other illegal activities"[8]. Further, to raise funds especially in poor countries, where it is difficult to find enough money to combat wildlife crimes, Ranger forces and conservationists are reaching out to crowd funding sites that pay for tools to fight poachers, incorporate drones, get the aid of sniffer dogs, and weapons to initiate ground patrols[9].

IV. METHODOLOGY ADOPTED FOR THE STUDY

The study has incorporated analytical method of research as it strives to analyse the need of better technological assistance for wildlife protection in India. Primary and secondary data has been analysed through government reports and various other sources to understand the status of law enforcement in dealing with wildlife crimes and the need for advanced technology to keep them at par with the global call for curbing such crimes.

V. WILDLIFE CRIME STATISTICS IN INDIA: AN INTERPRETATION

Wildlife crimes in India is dealt stringently with enactment of specific legislation such as the The Environmental (Protection) Act, 1986, The Wildlife (Protection) Act,1972.

For the purposes of the study, the data relating to wildlife crime has been borrowed from Crime in India Statistics-2016[10], and analyses the responses of the law enforcement to the offences against wildlife under the Wildlife Protection Act, 1972.

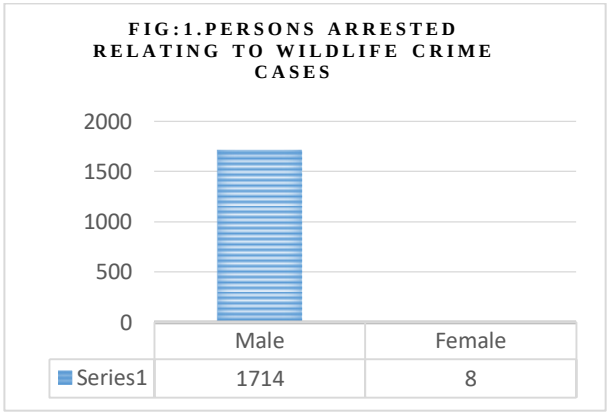

Figure1: Persons arrested relating to Wildlife Crime Cases.

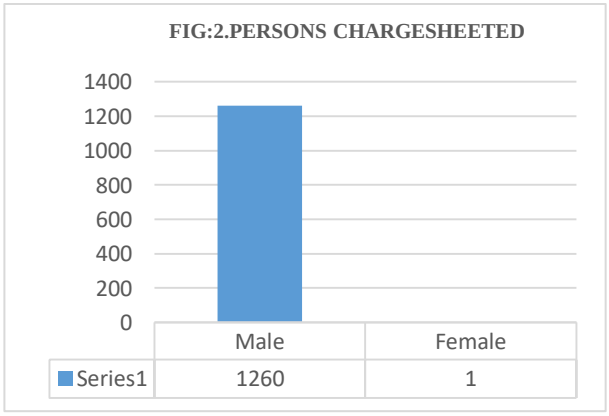

Figure 2: Persons Chargesheeted

The above mentioned figure analyses the number of persons arrested in the year 2016 under the Wildlife Protection Act, 1972. Out of a total number of 1722 persons arrested, 1714 are male, while 8 are female. The next figure expresses the persons against whom chargesheet was framed. Out of total 1261 persons, 1260 is male while 1 is a female.

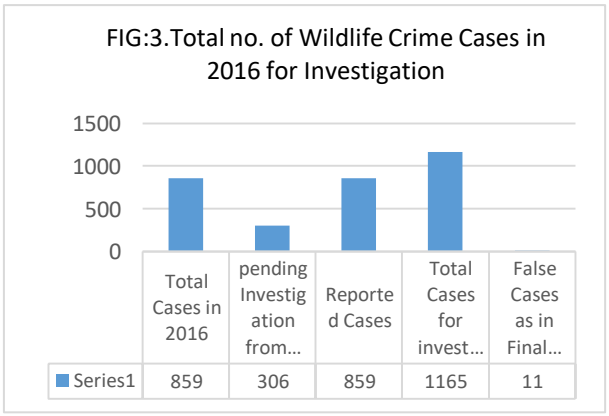

Figure 3: Total Number of Wildlife Crime Cases for Investigation

The above figure shows the total number of wildlife crime cases which the police had to investigate in the year 2016. Total cases registered in the year 2016 according to the statistics are 859 while 306 cases are pending for investigation from 2015. Thus, the total cases to be investigated in the 2016 accrue up to 1165. 11 cases have been reported as false in the final report submission.

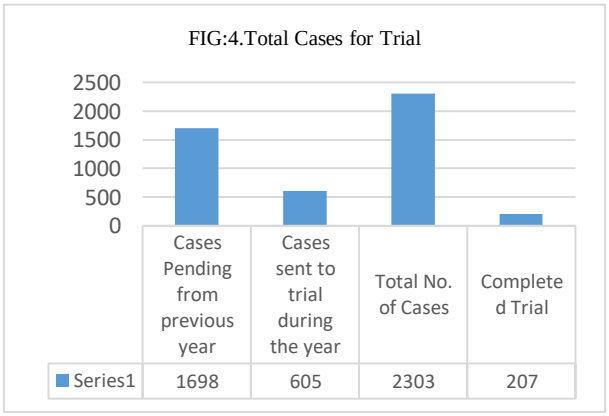

Figure 4: Total Number of Cases for Trial in 2016

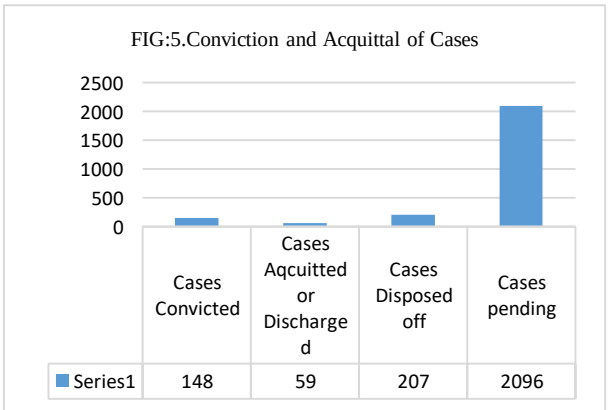

Figure 5: Cases Disposed and Pending.

The aforementioned figures explain the total cases of wildlife crimes instituted for trial which accounted up to 2303 including the 1698 pending cases from 2015. 605 cases were forwarded for trial in 2016 while 207 cases completed trial. 148 cases served conviction while 59 cases were acquitted or discharged. A huge number of 2096 cases is pending for trial according to the statistics.

Further, Figure 6 explains the conviction rate and pendency percentage in wildlife crime cases in the year 2016. The Conviction rate stands low at 71.5% in comparison to the pendency percentage of cases for trial which is 91%.

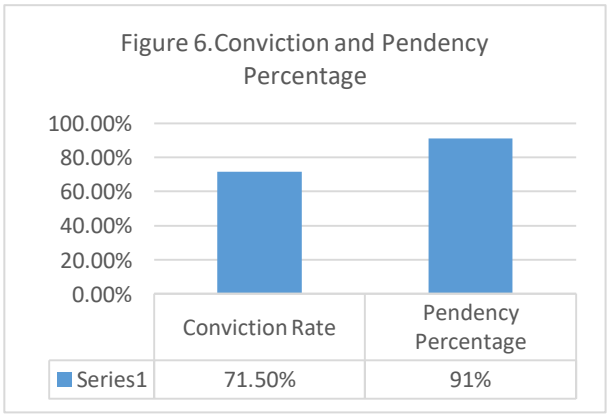

Figure 6: Conviction Rate and Pendency Percentage

Thus, the statistics give out a rather gloomy idea regarding the pending cases than the cases disposed. The number of arrests being made is commendable yet the pendency of cases for investigation and trial is rather high.

VI. TECHNOLOGY IN WILDLIFE PROTECTION: THE INDIAN SCENARIO

Closed Circuit television surveillance(CCTV) for visual monitoring, metal detectors to discover open metal snares and traps set for wild animals, Two Way Radio transceiver for communication, and drones are some technologies extensively used in India. Wildlife Radio Telemetry including satellite tracking and Global Positioning System(GPS) along with remote sensing and geographic information system (GIS) are extensively used by wildlife experts, officials and rangers for detecting wildlife crimes. But these technologies fall short in combating wildlife crime. Wildlife Crime is more organized and advanced in terms of technology and use of weapons. Owing to this, the law enforcement has recently incorporated several innovative techniques to combat wildlife crime.

For instance, *Hejje* which means pug mark in Kannada is an indigenously developed android app for Tiger Tracking, launched at Bandipur National Park, Karnataka. It aims at assisting and coordinating foot patrolling of forest staff and providing them with live updates of anti-poaching activities. Drones have now been incorporated in Kaziranga National Park for continuous monitoring of the rare rhinos, elephants and wildlife[11]. Further submarine remotely operated vehicles(ROVs) are also used to aid in conservation.

Another innovative development is the use of Electronic Eye or e-Eye which has been devised by two engineers and wildlife enthusiasts, Bhushan and Ravikant Singh, who co-founded Binomial Solutions Private Limited. It is an anti poaching apparatus, enabled by intelligent technology and can be used to monitor areas 24x7 even in inaccessible areas. “The pilot project was conducted in Corbett National Park, famed for its high tiger population and density”[12]. These are some vivid examples of technologies incorporated for curbing wildlife crime in India.

VII. USE AND ABUSE OF TECHNOLOGY ON WILDLIFE CRIMES: SPECIAL REFERENCE TO INDIA

Technology has found its use by the law enforcement, conservationists in protecting wildlife in various ways. Be it radar, GPS enabled assistance or technologically advanced vehicles, technology has facilitated in resolving numerous challenges faced by the rangers and conservationists against wildlife crime. However, ironically the antagonists also have a fair share of gain from the same technologies used to protect the wildlife. Poachers have been reported of intercepting signals from conservationists tags which is used to protect a range of species in order to track them down easily and hunt them[13]. Further, it has also been claimed by leading scientists that cheap drones used to survey endangered animals by conservationists, are at the risk of being used by poachers to kill wildlife. Drones are useful to detect animals in difficult terrain thus, it will serve the purpose. Some of the leading technologies common to both poachers and law enforcement are:

1. **GPS enabled tracking system:** This kind of tracking system enables observation of migratory or movement patterns of animals using Global Positioning system and a range of software tools.
2. **Radio Telemetry:** Wildlife Radio telemetry tracks the movements by transmission of radio signals from the transmitter attached on the animal of interest.
3. **Infrared Scopes:** Device having the capacity of detecting infrared radiation, especially helpful at night.
4. **Unmanned Aerial Vehicles or Drones:** These are commonly known as drones and have the ability to give information about inaccessible areas with the help of a ground based control.
5. **Heavy Armoured Vehicles:** This vehicle is usually equipped with operational mobility and defensive capabilities and often used in armed conflict areas.
6. **Helicopters:** Helicopters have the ability to access difficult terrain and have powerful engine. They can be used to lift heavy objects from the ground while being in air and thus serve numerous purpose of both use and abuse of technology.

VIII. ENHANCED TECHNOLOGY TO COMBAT WILDLIFE CRIME: THE FUTURE IN INDIA

International illegal wildlife trade is a major threat to conservation of biodiversity and a grave concern of the government and policymakers of the developing as well as developed nations throughout the world[14]. India is rich in its wildlife, has permeable borders and an accessible coastline which makes it one of the best target and route of illegal wildlife trade.

There are certain new advanced technologies which will aid in monitoring wildlife crimes and other threats to wildlife. Space technologies like Satellite Earth Observation Techniques, Global Navigation Satellite Systems may provide better assistance in curbing wildlife crimes. Satellite Communication can provide data and communications connecting aircrafts and ground vehicles and sea vessels on border patrol. This enables information to be circulated to scattered forces and help them operate as a single unit. In remote areas, and where terrestrial networks are insufficient, satellite communications can provide secure connectivity. It is therefore important that some of the advanced technologies are adopted for effectively curbing wildlife crimes in India.

IX. RECOMMENDATIONS TO COMBAT WILDLIFE CRIMES IN INDIA

Use of technology has its own pros and cons with respect to various features. India is a developing country and integration of highly facilitating technology for dealing with wildlife crime has its own drawback. Some recommendations that may be humbly suggested as deduced from the present study are as follows:

1. Integration of technology is at times not cost effective or situation conducive. For instance, while most poaching occurs at night, systems that function in the dark are required.

2. Connectivity and timely sharing of information and data is crucial, proper networking system is to be devised and sustained to support the communication backbone.

3. India is a country with diverse and difficult terrain so each technology needs to be area specific to give out desired results(Wildlife Crime Technology Project). A place having lush canopy, shall not be conducive for Unmanned Aerial Vehicles (UAVs) and will be a significant obstruction[15].

4. India must however, incorporate and develop more advanced innovative technology suitable for each of its region to control wildlife crime. Though Radio Telemetry is a widely used simple technology throughout India, it was developed and has been in use since the 1960s.

5. The rangers and forest officials need to be suitably trained and equipped with state of the art technologies and weapons to fend of criminals who outsmart them with more powerful technology.

X. CONCLUSION

It can be noted that technology is being used in either ways,i.e. by criminals and by wildlife protectors, with regard to access to wildlife but it is important that law enforcement is able to make the best of it. “While science and technology could have an important impact, no one approach will tackle every part of it as the trade is a complex system that involves many species, environments and actors”[16](The Royal Society,2018,p6). India has developed innovative techniques for wildlife crime detection and has incorporated ideas and use of tools and techniques for wildlife conservation from advanced countries. But, the country still has to leap over various obstruction to hold a steady have over wildlife protection. Wildlife protection is our responsibility and we as the most intelligent beings owe the responsibility to sustain the environment. Technology itself will not save wildlife but it can create tremendous progress in protecting the wildlife when accurately used.

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