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TRENDS AND PATTERNS OF ILLEGAL WILDLIFE HUNTING AND TRADING IN UTTAR PRADESH, INDIA

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Abstract

Wildlife trade, poaching and its use is characterized as wildlife crime, also it has become a global problem. The illegal wildlife trade is a increasing problem driven by the number of factors (e.g. alternative medicine, accessories and subsistence). High demand for illicit wildlife products is threatening the existence of many of the most of d species. Enquiring and investigating crime hotspots include analyzing the enforcement of law and seizure data, highlighting areas with high biodiversity has been studied here. In this present study, we have analyzed wildlife crime hotspot in different districts/ divisions of Uttar Pradesh, India from 2012 to 2021.Basically, we have extracted the data which include information on trafficking, illegal possessions, breaking hunting and poaching laws and exploitation, illegal scientific collections, and information from mass media. In results, study support the understanding that the reports of illegal trade are underestimates. This research helps to gain the understanding the exact reason to the problem. This study also supports to inform policies and strategies to combat the poaching and hunting activities that affect wildlife in regions with high biodiversity. Moreover, this also provides the first detailed state of assessment on illegal trade and hunting in Uttar Pradesh. The analysis done suggests trade in wildlife in protected areas of 12 districts of Uttar Pradesh and hike in trade of mammalian species, like Indian Pangolin, and leopard. In addition, the seizure reported more often in different districts and areas bordering Nepal, China, and gulf countries. This states that well-organized illegal wildlife trade and associations taking place in Uttar Pradesh and gulf countries act as both a source and a transit country.

Keywords: Poaching; Seizures; Wildlife crime; Hotspots; Uttar Pradesh

Introduction

Trading in wildlife, poaching and its use is considered as wildlife crime, which has become a global problem these days. The escalation of crime in wildlife consisting of wildlife trafficking over the years has become a substantial threat to ecological stability [1]. Wildlife crime considered to be use, trade of species and illegal harvesting of species, which is contrary to the national laws which states offences that may not lead to strong penalties (UNODC, 2016, 2020). This as become a global concern that considerably reduces population and contributes directly to the extinction of species that characterize the Anthropocene [2]. Species are facing a combination of threats i.e., loss of suitable habitats, increasing human conflict and illegal trade are pushing species to verge of extinction. Considering animals in Asia, are becoming extinct due to indiscriminate poaching incidents and illegal trade. The number of inviting for action by policy makers and responsible groups claimed to regulate the biodiversity markets, where unsustainable trade in wildlife leading to be a leading cause of population decline over the world.

According to L.W. Sherman et al. [4] seminal article, the crime of the place research has found that crime concentrates the micro-graphic unit [5], otherwise known as hotspots. 'Hot

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product' analysis has become highlighted in this field of wildlife crime, which focusses on species that are poached and/or trafficked more than others. There is not every species of wild is equally given importance by humans or even accessible, and as such, there is an expectation that poaching should be unevenly distributed among wildlife species [1].

The increase in international exchange and interconnected markets have increased due to globalization which further drives the trade by removing geographical barriers, in some cases incentivizing former subsistence harvesters to sell into the trade [3].

This is also seen that, conservation efforts are improvised by analyzing numerous wildlife crimes in tracking traditional types (e.g., how, when, where and what is targeted) to identify patterns and underlying opportunity structure involves [1]. Surveys done in local market have stated that species are exploited and sold in illicit markets and ground truthing research have fold that specific species is preferred as bushmeat by hunters and poachers [6,1]. The study by Moreto and Lemieux stated that level of hunting and poaching increases during holidays in order to earn more money and for family feast and celebration [1]. Moreover, the field of research on wildlife trafficking and off-load problems has begun to incorporate ideas related to hot routes [7] and risky facilities into various studies [8].

Trade in species like freshwater turtle and tortoise has been focused much, however exploited mostly for use, traditional Chinese medicines, food and for pet trade overseas [3]. This exploitation has put many turtle species at verge of extinction with approximate 60% of all 328 species of turtle and tortoise listed either as Threatened or extinct by IUCN [3]. Comprehending wildlife trade data from wildlife market perspective facilitate content to help better regulate the trade [3].

The hunting and subsequent illegal trafficking of species has been booming locally at global level [7] and directly proportionate reducing species. The illegal wildlife trade has been rising due to demand of animals as pets, accessories, or luxury items, bushmeat and alternative-traditional medicines [9, 10].

CITES (Convention on International Trade in Endangered Species) which is an international treaty obliging signatory countries to monitor wildlife trafficking and trade and act on behalf of species which fall in category of threatened species. Under CITES species are categorized as Appendix I (exceptional trading), Appendix II (non-detriment finding and export permit required for trade, Appendix III (where country has asked other CITES party for assistance in controlling trade), or non-CITES (CITES, 1973) [16]. Similarly, TRAFFIC which is wildlife trade monitoring network. The Joint project of various NGO's and conservation authorities which conduct studies on trade, assist in investigation on illegal trade network and recommend plans of action to manage wildlife trade sustainably and responsibly. While information about the true scale of illegal trade is restricted by nature, these organizations are uniquely positioned to provide the best available data [11]. This study focusses on wildlife trade, trafficking, and seizure possessions of various species from different districts of Uttar Pradesh and tracked a route for respective species.

Biodiversity has depleted severely in the Asian tropical forests due to high rate of hunting owing to high demand and low supply of domesticated meat sources. Sharp trends in hunting of animals are also contributed to the market value of wildlife products that has escalated in recent times and serving as excellent sources of income in low land trible areas [12,16].

Future research and management plans can be framed accordingly which will look over the problems and minimize their effect. Further, the hunting and trading over ten years in Uttar Pradsh was studied to get a view of an overall pattern of urbanization. No work has been done till date in this area regarding the pattern and trend of wildlife hunting. This article will be helpful for future research and managemental implementation where proper policy must be framed with respect to species specific conservation of habitats.

Materials and Methods

Study Area

The study was carried out in Uttar Pradesh, India. From the reports with forest department and e-media from 2012-2021, the 10 major districts were primarily focussed on i.e., Pilibhit, Bahraich, Gonda, Sultanpur, Lakhimpur- kheri, Balrampur, Barabanki, Maharajganj and Amethi (Fig. 1).

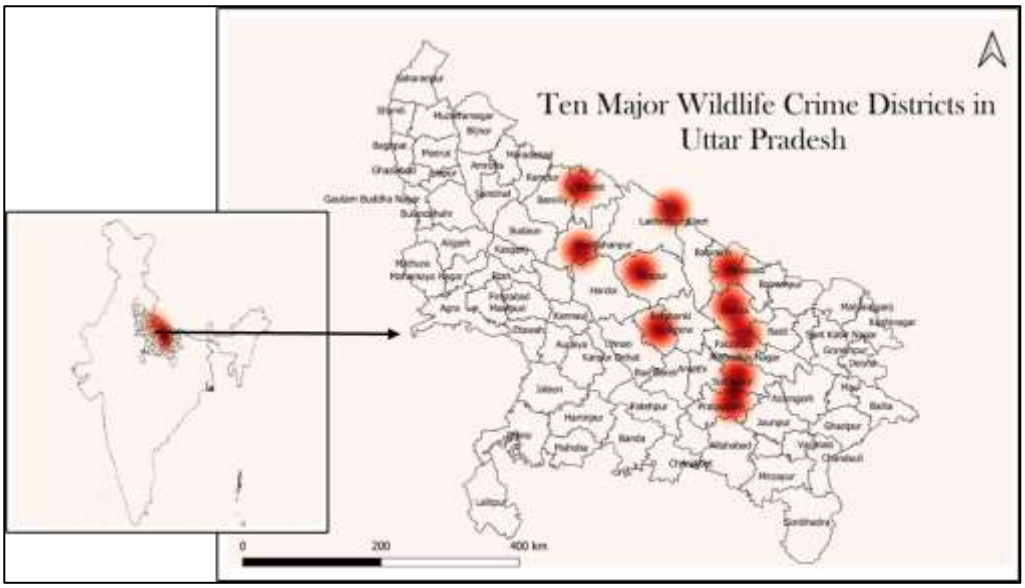

Fig. 1. Wildlife crime hotspost map of Uttar Pradesh.

Pilibhit is north-eastern district of Rohilkhand division of Uttar Pradesh which is close to sub- Himalayan belt adjacent to boundary of Nepal. It lies between the parallels of 28º6′ and 28º53′ N latitude and the meridians of 79º57′ and 80º27′ E longitude. The district has one of the three tiger reserves of the state namely Pilibhit Tiger Reserve. Bahraich situated in Gangetic plains in Uttar Pradesh (28.24° and 27.4° N and 81.65 and 81.3° E). The area shares borders with Nepal in the north and districts of Barabanki and Sitapur in south, Lakhimpur- Kheri in west and Saraswati in the east. This distict has Katerniaghat Wildlife Sanctuary which is a section of Dudhwa Tige Reserve. Lakhimpur-Kheri is largest district of the state, which is located 27.6° to 28.6° N and 80.34° to 81.30°E. It shares boundary with Bahraich in east. Shahjahanpur and Pilibhit in west and Hardoi and Sitapur in south and open borders with Nepal in the north. This district is well-known for Dudhwa National Park, which is only National Park in UP. Balrampur district is a part of Devipatan division and is located at 27.43°N and 82.18°E latitude and longitude, respectively. The district shares border with Nepal in the north, Shravasti district in west, Gonda in south and southwest and Siddharthanagar in the east and Kapilvastu District, Nepal in north-east. Gonda district in terai region of the state Uttar Pradesh. It lies between 26º 47' and 27º 20' N latitude and 81º 30' and 82º 46' E longitude. It has linked borders with Bahraich in west, Barabanki in south-west, Ayodhya in south, Basti covering south-east and Balrampur & Shravasti, Siddharthanagar in north-east. Barabanki district is situated 26° 30' and 27° 19' N and 80° 58' and 81° 55' E latitude and longitude, respectively. This is one of the fertile districts of the state as the rivers Ghaghra, Gomti and Kalyani with their tributaries flows through the area. Maharajganj is located at Indo-Nepal border in north, Gorakhpur district in south, Kushinagar in east and Siddharth Nagar & Sant Kabir Nagar districts in west. It is situated at 25°50 to 26°20′ N and 83°25′to 84°20′ E latitude and longitude respectively. The district Amethi is situated along the latitude 26°9´north and longitude 81°49´east. It shares borders with Faizabad district in north,

Pratapgarh in south, Barabanki & Raibareli in the west and Sultanpur in the east. Sultanpur district lies in latitude 26° 15′ N and longitude 82°05′E.

Methods

Register method was used to collect secondary data from Principal Chief Conservator of Forest office, Divisional Forest Offices (DFOs) and forest department from Uttar Pradesh. Specific data were recorded from the registers. Species, parts and amount seized, origin and destination of the seizure, seizure date were noted from registers. Initial cumulative data was obtained from Department of Forests, Uttar Pradesh. Later the DFOs were visited personally, and records were analyzed since the oldest record available. The data was collected from a period of 2012 to 2021. Indirect Data Collection via emails and phone interviews was done to obtain information from the DFOs and other forest official which were deemed inaccessible. Distant districts from capital of Uttar Pradesh such as Pilibhit, Bahraich, Gonda, Sultanpur, Lakhimpur-kheri, Balrampur, Barabanki, Maharajganj; Amethi were accessed only via email and phone contact.

For this study we have compiled all the reports from forest department on illegal wildlife trade seizures data, species confiscated. The data was organised into categorical database and analysed. Categories were location, species and number of cases reported from the locations.

Whereas seizures which were confiscated were classified into three types: specimens (dead or alive), parts (bone, skins, antlers, skeleton etc.), and derivates or products (belts, wallets, bags etc.). These were groups according to class- herpetofauna, birds and mammals [2].

With the data extracted from various sources which include data from forest department and e-sources and investigated the area for ground truthing thus, helping for trade generation.

Results and Discussion

Hotspots

During the study periods between 2012 to 2021, a total of (n=743) seizures were recorded, those districts have been identified as hotspots where the wildlife is threatened to be killed or are being killed illegally by poachers or locals for either monetary benefits or due to human animal conflicts. These are the regions which are rich in biodiversity, densely forested, shares international border and suffers with human interferences in the form of encroachment of forest lands for various reasons. Based on the seizures data, the regions with maximum cases were reported during 2012-2021 in Pilibhit (30.01%) followed by Lakhimpur-Kheri (29.20%), Katarnia ghat Bahraich (17.22%), Balrampur and Gonda (4.71% in each) respectively, and 3.09% in each, Barabanki and Maharajganj respectively figure 2. In Amethi there were only 2.82% seizures cases have been reported. Very few cases of hunting and trading cases were reported from Sultanpur, Shravasti, Ambedkar Nagar, Ayodhya. Hunting as a source of income is a relatively new driver for hunting in the region (Mann Whitney U test for hunting as a source of income between old (mean rank = 17.34) and young hunters (mean rank = 15.29): $U = 119.50$, $Z = -2.456$, $P = 0.010$).

Map illustrates the illegal wildlife trafficking is a lucrative business which involves various people assisting in these trading practices. People include rural harvesters, hunters, intermediate traders, wholesalers, relatilers and finally to the consumers and users figure 3. The connection of illegal wildlife trade is as simple as individual consumers making direct contact with hunters and specialist whih leads to network of global scales. Trading practice includes domestic and international specialist in assisting handling, storage, transport, processing, packaging, exporting, marketing, security, and retailing. The illegal trading of wildlife is probably understood as specialized disciplines including smuggling methods, trafficking routes and markets.

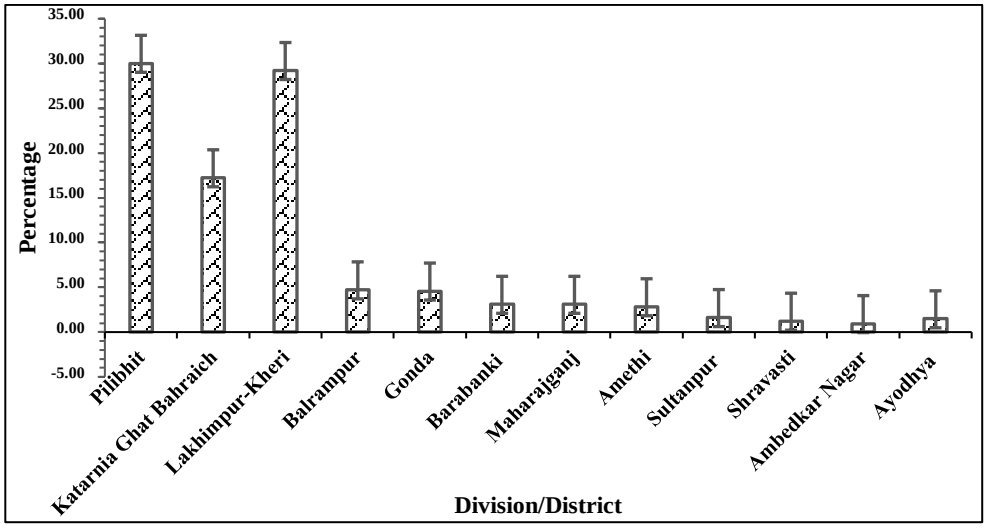

Fig. 2. Total number of cases reported in the study area since 2012-2021

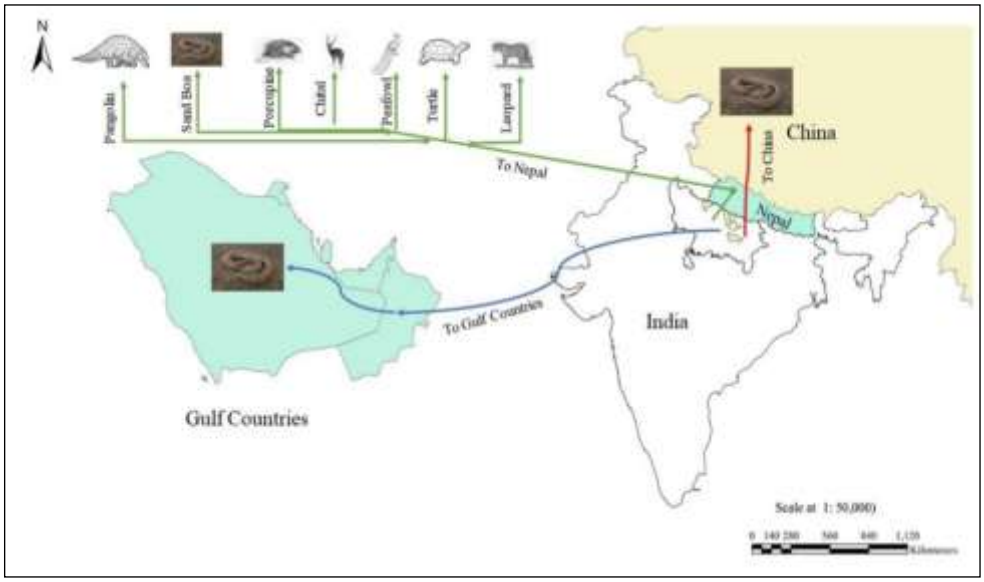

Fig. 3. Wildlife trading route map of Uttar Pradesh to different countries

The highest number of wildlife crime cases were recorded in Pilibhit in previous decade (2012-2021) which makes this area the most crucial hotspot. The maximum number (n= 47) cases were recorded in 2020, followed by 2017 and 2019 (n =31 and n=30) respectively figure 4. Hunters are either killing for trading the animal article and gall bladder. The maximum cases have been reported in Lakhmipur Kheri 2019, 2018 and 2017 respectivley Figure 5. All the hunters are using the hunting methods were shooting, poisoning, caught through the nets gum stick.

The area has rich biodiversity and shares open boundary with Nepal which attract poachers and hunters for easy wildlife trafficking and trade. The terrain of the tiger reserve becomes almost inaccessible during monsoon, also a major reason for increased poaching of animals. The region is a good producer of Sugarcane and animals often take shelter in these fields. Harvesting of

Sugarcane has often resulted in Human Wildlife Conflict in this region. Such incidences often result in the mortality of the animal. No of cases registered year-wise are shown in the graph below.

Lakhimpur- Kheri division has maximum cases reported in last 4 years almost average of 20 cases seen from 2018 to 2019 (Fig. 5). Bahraich district has fluctuating cases over the period, the maximum cases were reported in year 2015 and 2018, (n =26 and n =25 respectivley) and lowest in last year i.e., 2021 (Fig. 6). Whereas, in Balrampur, in 2019 recorded cases has reached almost 10 cases followed by cases in 2017 and 2020 (Fig. 7). In Gonda and Barabanki division maximum cases were recorded in 2017-18 (6 cases) and 2015(6 cases) respectively and in 2020 no cases have been recored and 2017 (1 case) respectively figures 8 and 9. In Maharajgan, Amethi and Sultanpur, Ayodhya, Ambedkar Nagar and Shravati division have been reported very few cases figures 10, 11, 12 and 13.

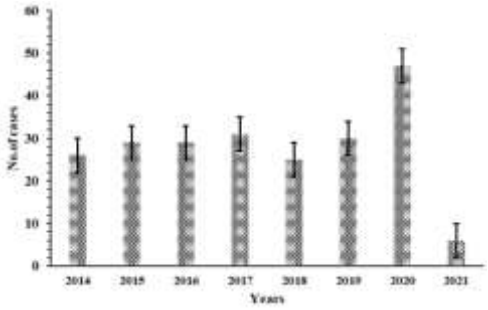

Fig. 4. No. of cases reported in Pilibhit division

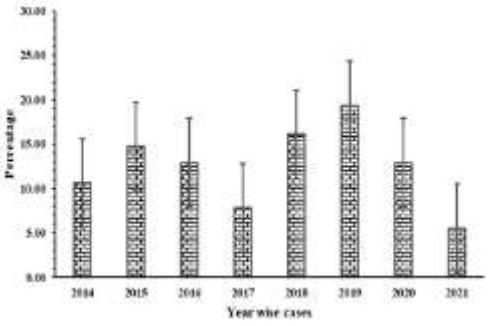

Fig. 5. No. of cases reported in Lakhmipur Kheri division

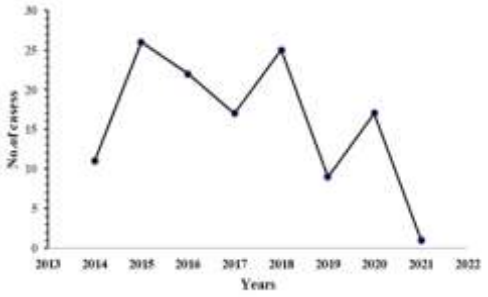

Fig. 6. No. of cases reported in Bahraich division

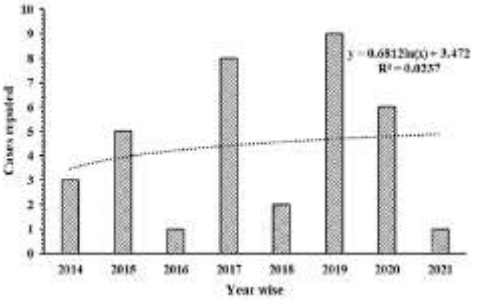

Fig. 7. No. of cases reported in Balrampur division

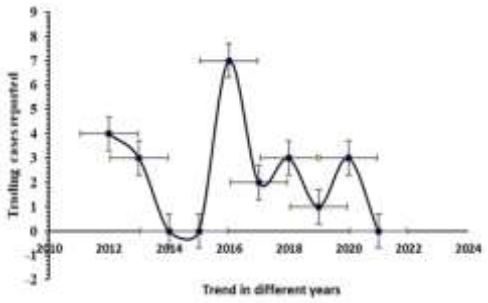

Fig. 8. No. of cases reported in Gonda division

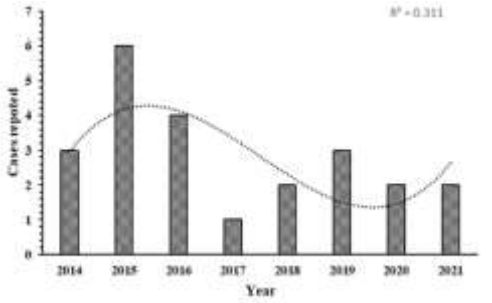

Fig. 9. No. of cases reported in Barabanki division

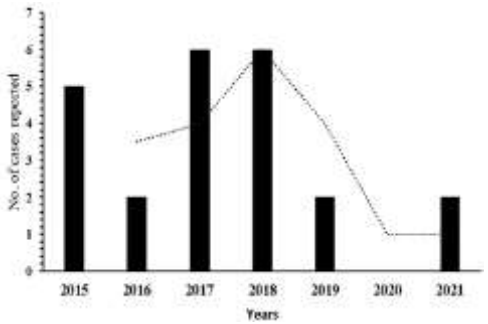

Fig. 10. No. of cases reported in Maharajganj division

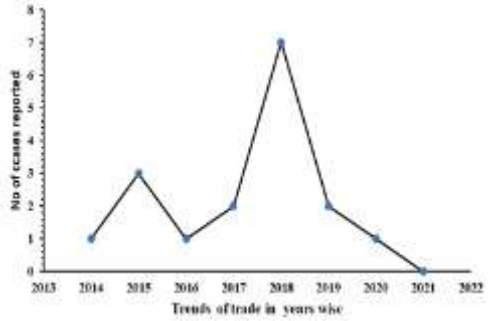

Fig. 11. No. of cases reported in Amethi division

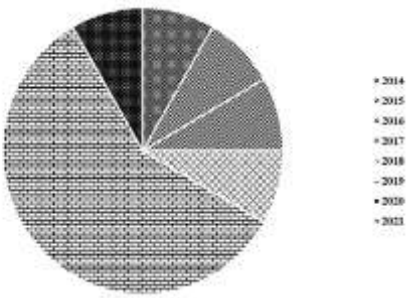

Fig. 12. No. of cases reported in Sultanpur division

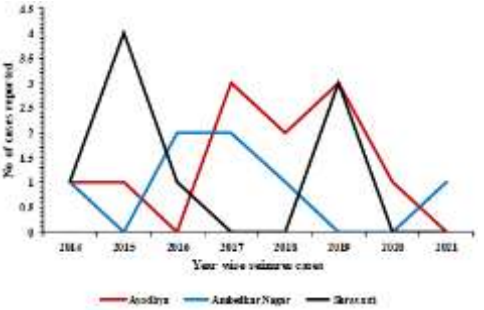

Fig. 13. No. of cases reported in Ayodhya and others division

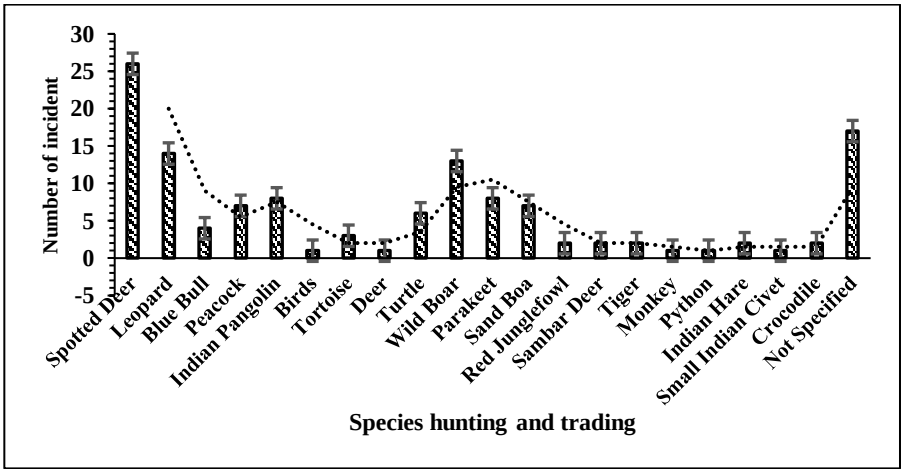

Fig. 14. No. of cases reported in Bahraich division

The database showed that arrests with confiscation were made from different districts in Uttar Pradesh, where Bahraich and Pilibhit district accounted for more than 20% of all seizures, followed by Lakhmipur Kheri (15.5%) and Balrampur (16% to18%). Illicit trade of Indian pangolin, tiger and leopard parts showed a highly connected with internation border network figures 14, 15,16 and 17.

The illegal wildlife trading network for common Indian pangolin, leopard, Python, tortoise, parakeet, sand boa, deer, civet, and crocodile showed the connectivity with international market. Bahraich (Dudwa Tiger Reserve and Katerniaghat Wildlife Sanctuary) and Pilibhit had

the highest hunting and trading areas, followed by Lakhmipur Kheeri and Balrampur figures 14, 15, 16 and 17.

Pilibhit has been recorded maximum number of cases of wildlife seizures and trade figure 15. In Pilibhit, more than 30% of species were not specified, followed by 9% of spotted deer and wild bore were huntingand trading. The Indian pangolin were hunted and traded about 8% within thin boundaries of India- Nepal.

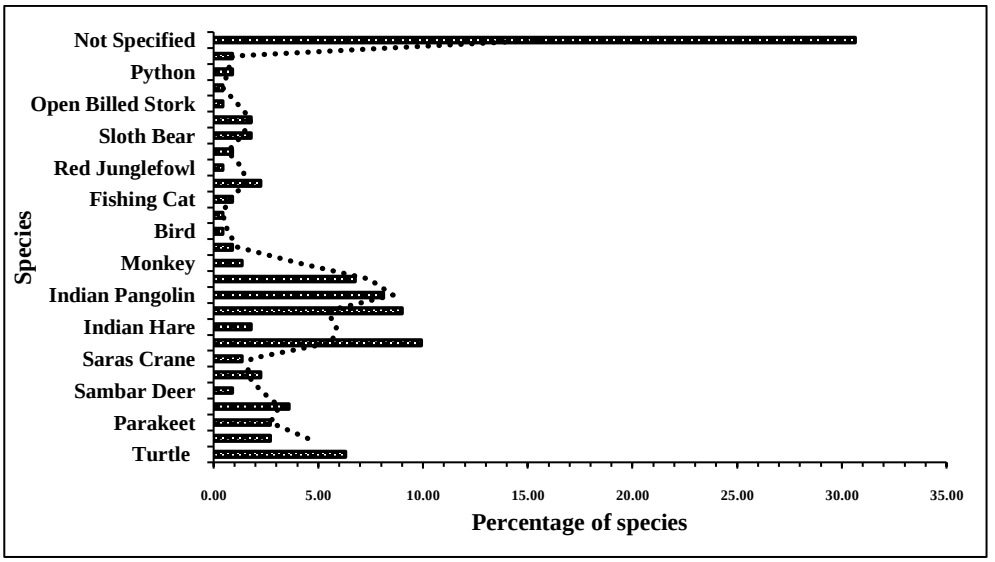

Fig. 15. No. of cases reported in Pilibhit division

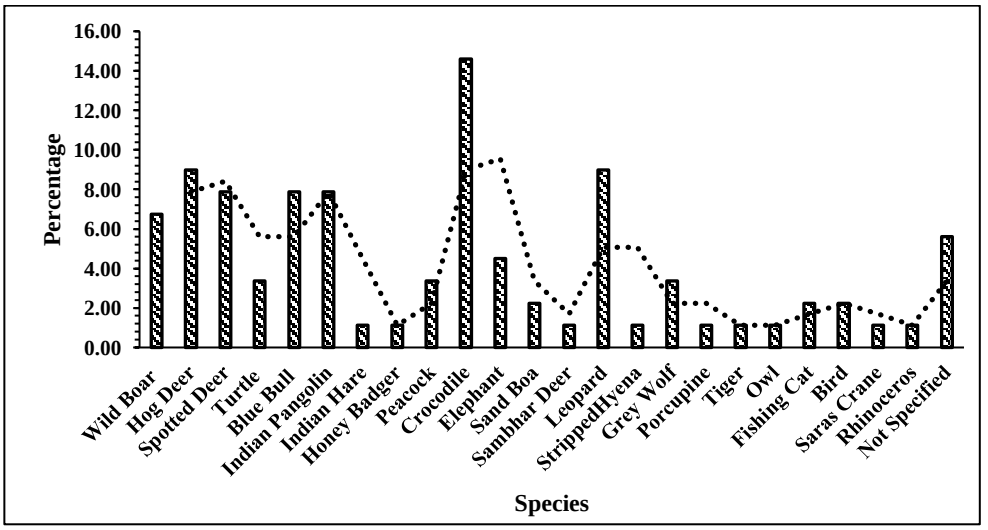

Fig. 16. No. of cases reported in Lakhimpur Kheri division

In Lakhimpur-Kheri, 23 species have been reported under hunting and trading. About 14% cases were crocodile following Leopard (8%) and Hog deer (7%) in the area. Moreover, a case of rhinocersos has been reported from the area. these species were more transported to neighbouring country Nepal and other Gulf country Figure 16. As assuming to have high trading

market in China. Particuarly, derivates of Leopard from the area were seized from traders enroute to Nepal.

Leading behind, Lakhimpur-Kheri, district Balmpur has recorded cases. In this district about 17% of endangered Indian Pangolin has been reported and traded to Nepal for its scales, nails and other derivatives Fig. 16. Wild Boar shares equal percentage as of India Pangolin from the district. Indian Pangolin almost equally reported from district Bahraich followed by leopard parts from the area. Bahraich district has maximum cases of Spotted Deer (about 20%) followed by Wild Boar (about 10 %).

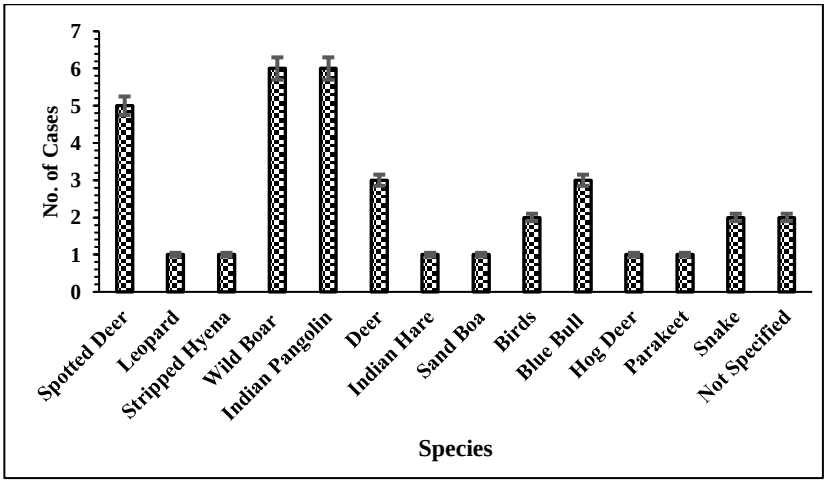

Fig. 17. Species wise cases reported during study period from Balarampur

Based of our findings, total (n = 743) cases, it lies at number three of hotspots with cases followed by Pilibhit, Lakhmipur Kheri and Bahraich. With the reported data from 2012-2021, the maximum number wildlife related cases were in 2020, The cases include species like Indian pangolin, hog deer, spotted deer, birds, Indian star tortoise, leopard, tiger, crocodile, monkey, rabbit, civet, wild boar etc. Cases threatening lives of big mammals like elephant, big cats etc. were also reported due to accidents.

This study provides the detailed state assessment of illegal wildlife trade in Uttar Pradesh for the first time. Analysis suggests that trade in wildlife of protected species is widespread in 12 districts of Uttar Pradesh, maximumly mammalian species, Indian Pangolin and Leopard.

The seizures were reported more often in different districts and areas bordering Nepal China and gulf countries. This states that well-organised illegal trade associations still occur in Uttar Pradesh, whereas gulf countries act as a source and a transit country. It is till unknown that whether all seized parts originated from Uttar Pradesh, India. Future research could be focused on this aspect. Wildlife trading has been hiked due to lack of knowledge about the species ecological importance and laws and policies.

Conclusion

This study and analysis have shown a baseline information on species confiscated dead or alive and understanding the patterns of trade in state which has been affecting the species composition in the area. The data, which was collected, a data base was created and points of contact has been recorded for further strategic planning and efforts. Otherwise, the target species will wipe out soon. Each country has different policies and laws but policies under CITES same for nationally and internationally. This study has resulted to point out hotspots in the state and necessary laws and policies to work on along with monitoring and conservation. This study

provides the illegal wildlife trade basic research that has identified the hotspot and explained major trends and patterns of illegal wildlife trades in Uttar Pradesh, India.

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