

PANGOLINS IN PERIL



Combatting the illegal trade of pangolins in India

Monesh Singh Tomar, Hosur Veerbhadrappa Girisha,
Jose Louies, and Debobroto Sircar

The Wildlife Trust of India (WTI) is a non-profit conservation organization committed to help conserve nature, especially endangered species and threatened habitats, in partnership with communities and governments.

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September, 2023



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PREFACE

Pangolins are the world's most trafficked mammal today. As a result, all the species, whether African or Asian, are threatened in the IUCN Red List. India is home to two of them, the Critically Endangered Chinese pangolin in the north-east and the Endangered Indian Pangolin in most of peninsular India. Both seem to be illegally caught and traded in vast numbers, the seizures pointing to hundreds of kilos of pangolin scales leaving the country every year.

This, to me, as a wildlife naturalist and biologist, is an amazing fact. In all my wanderings in the country totaling 35 years, I have never come across the pangolin in its absolutely wild and native state. I have seen both species being released back to the wild after being rescued but that is not about walking in the forests and coming across a pangolin stretching its long body across a track, flicking its equally long tongue in search of ants. I wonder therefore how the poachers end up finding such a large number of pangolins to trade in. Equally puzzling is how such large quantities get through India's strict enforcement system to leave the borders. While tiger part or ivory, rhino horn or bear bile has been strictly enforced, it seems likely that these need equal sensitization and attention of border enforcement agencies.

This publication is the tip of the anteater trade in India. It only deals with a very interesting cybercrime study done online by our investigators and 25 operations that involved our officers assisting enforcement agencies of India. This by itself will not end the illegal pangolin trade, but it points to areas where we, the enforcement community that includes more than a dozen government agencies as well as civil society, can contribute. The whole concept of citizen science is now well established but the practice of citizen's enforcement is less so. Also of some interest to us at WTI is the ability of putting back some of these animals after rescue from the trade. I hope this OR focusses efforts to save this enigmatic beast from the travails of illegal wildlife crime.

Vivek Menon
Founder and ED, WTI

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We also thank the Wildlife Crime Control Division (WCCD) team, as well as the Wildlife Trust of India's covert sources and cyber spotters, for providing valuable actionable intelligence on the illegal trade.

Our thanks to Mr. Vivek Menon, Executive Director, Wildlife Trust of India (WTI), particularly for his constant support and valuable inputs in managing the project and concentrating on the illegal trade of pangolins in India. We also thank Ms. Tara Gandhi, whose insightful suggestions have greatly improved the overall quality and clarity of the content.

We are grateful to Mr. H.V. Girisha, IFS, Additional Director, Wildlife Crime Control Bureau (WCCB), Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India, for his guidance in facilitating enforcement actions against illegal pangolin trafficking all across the country. A special thanks to all of the WCCB's Regional Deputy Directors and Wildlife Inspectors for their support and guidance in curbing the illegal trade of Indian and Chinese pangolins in India.

We would also like to thank WTI's international partner IFAW and all international Non-Governmental Organizations that collaborated to counter the transnational illegal wildlife trade of pangolins.

Finally, the WTIs Pan India Enforcement Project could not have produced this report without the support of State enforcement agencies such as the Forest Department, Police Department, and regional enforcement agencies.

EXECUTIVE SUMMARY

Due to extensive unsustainable harvesting globally from the wild and illegal trade to meet the demand for its body parts, the only mammal in the animal kingdom with scales all over its body, the pangolin, has earned the title of ‘most trafficked wild mammal in the world’. Eight species of these elusive anteaters are found exclusively in the Afrotropical and Asian regions. India is home to two pangolin species: Indian pangolin (*Manis crassicaudata*) and Chinese Pangolin (*Manis pentadactyla*). These species are listed as Endangered and Critically Endangered on the International Union for Conservation of Nature’s (IUCN) Red List of Threatened Species. All pangolin species have been listed under Appendix-I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to regulate international trade in pangolins and pangolin body parts. It has also earned high protection in India under the Wild Life (Protection) Act, 1972, and is listed in Schedule-I of the Act, which prohibits hunting, trading, and any other activity that exploits pangolins in India. The act’s violation could result in a sentence of three to seven years in prison and a minimum fine of INR 25,000/-.

Despite having legislations and protection measures to control the illegal trade of pangolins in international and domestic illegal markets, pangolin species in India are on the verge of extinction due to the consumption of its meat, traditional medicinal uses, and for Traditional Chinese Medicines (TCMs) (DW Challender, 2015). Pangolin conservation in India is also complicated by a lack of knowledge about the population, behavior, and ecology of the species. Aside from hunting and illegal trade, habitat destruction, fire, drought, unsustainable development, and low conservation priority, all contribute to pangolin population decline across India. Rapidly growing illegal activity in cyberspace, as well as the involvement of wildlife traffickers on the internet in India, add to the challenge for enforcement agencies in combating the trade of pangolins in the country.

Wildlife Trust of India (WTI), a non-governmental organization works closely with the central and regional enforcement agencies to combat

the illegal trafficking of both species of pangolins in India. This report provides a detailed view of the status of the most trafficked wild mammal, detailing the global and national scenarios of illegal wildlife trafficking and WTI's contribution to counter the pangolin trade.

WTI has assisted wildlife enforcement agencies in successfully executing 25 national enforcement actions on the illegal trade of Indian and Chinese pangolin, resulting in the arrest of 67 pangolin traffickers from 12 states across India over the last two decades i.e. 2001 to 2023. During this period WTI's enforcement actions have resulted in saving 11 pangolins and the seizure of 182.61 kilograms of pangolin scales.

1. INTRODUCTION

1.1. THE SCALY ANTEATERS

The pangolin is a scaly mammal of the order 'Pholidota' with overlapping scales on its body (Bhandari et al., 2019). These keratin-based scales form an armored protection cover for the species. It is a burrowing wild animal that is nocturnal, elusive, non-aggressive, solitary, and myrmecophagous (feeding on ants) (Gaubert et al., 2011). The name Pangolin is derived from the Malayan word 'pen gulling,' which means 'rolling ball' (Chakraborty et al., 2002). In India, the pangolin is known by various local names in different regional languages such as Nalang, *Azhungu* (Tamil), *Chippuhandi*, *Anaja* (Kannada), *Alugu* (Telgu), *Eenam pechi* (Malayalam), *Serio* (Konkani), *Alank*, *Chippupanji* (Tulu), *Bajra keet*, *Bajra kapta*, *Sallu saap*, *Sal khapri* (Hindi), *Khavlya manjar* (Marathi), *Kidi Khau* (Gujarati), *Bonrui* (Assamese/Bengali), *Sapik* (Nishi), *Saham*, *Saphu*, *Shapu*, *Aphe*, *Mphou*, *Spa*, *Chaphu* (Manipuri), *Kawatee* (Garo), *Saphu* (Mizo), *Kheothai* (Bodo), *Tepha* (Zema), *Tyripud* (Khasi), *Lyngkheed* (Jaintia) and *Saham* (Tangkhul).

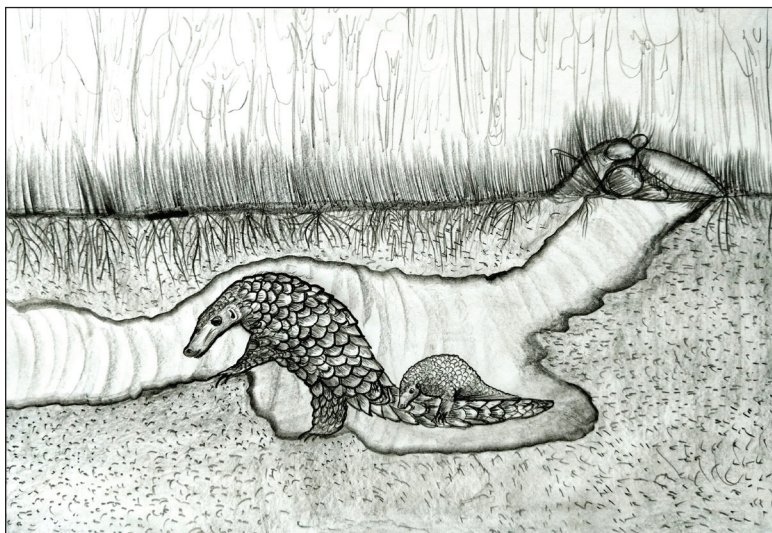


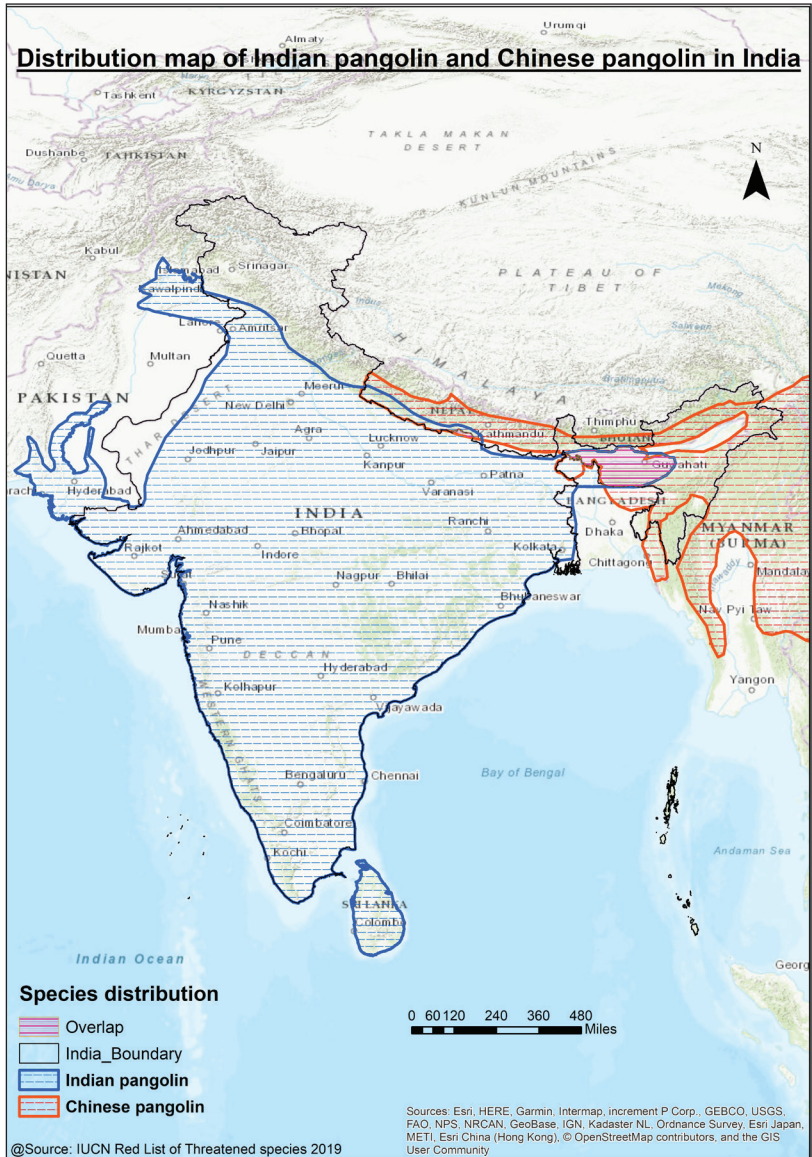
Fig. 1: A sketch of a pangolin with its juvenile inside a burrow (Adapted pangolin drawing by Dancey-wood)

Pangolins are the only mammals in India fully covered (head-to-toe) with scales. They have no teeth, but they do have an extremely long tubular tongue covered in sticky saliva for licking up their primary food. The tongue is longer than the body, and it is housed in a special pouch in the stomach. They have special spike-like growths in their stomachs that aid in the grinding of food for digestion and they also ingest small stones for the same purpose. Pangolins feed on a variety of termites and ants (Family: Formicidae spp.) and mark their territory by urinating and emitting musky anal secretion (Rasaily, and Bhandari, 2019). Pangolins serve a vital role in their ecosystems by managing insect populations, particularly termites and ants, and acting as habitat engineers. Their specialized myrmecophagous behavior benefits the forest by limiting the population growth of termites and other pest species that harm trees (Mahmood et al., 2013). Additionally, they impact ecosystems by aerating soil through burrowing, and aiding seed dispersal. Their activities enhance soil health, plant growth, and biodiversity while creating microhabitats.

There is limited information on the reproductive behavior of Indian pangolins in the wild. Except for the months of May and June, births are thought to be occurring all year. Chinese pangolins mate in spring and autumn (February-July) and give birth during autumn or early spring i.e. September-February (Wu et al.,2020). Pangolins typically have single offspring, but twins have been observed occasionally. The species' gestation period has been estimated to be between 65-70 days. Indian pangolins, like Chinese pangolins, show no external signs of pregnancy, and both sexes share the same burrow with their offspring. Maternal care appears to last about three months in the Indian Pangolin in captivity (Rasaily, and Bhandari, 2019).

1.2. SPECIES AND DISTRIBUTION

The Indian Pangolin can be found throughout India except in the trans-Himalaya, arid desert, and north-east India, going up to 2,500 meters in the Nilgiris in southern India, whereas the Chinese Pangolin is limited to north-east India, Sikkim eastwards to Assam, Arunachal Pradesh, Nagaland, and Meghalaya up to 1500 meters. However, overlaps have been recorded in Indo-Nepal border regions and lower Assam.



Pangolins can thrive in human-modified areas such as plantations, farmlands, and human settlements near forest edges because they are tolerant of minimal disturbances (Bhandari et al., 2019). They can be found in scrub, grasslands, forests (deciduous and evergreen), semi-arid areas, bamboo groves, urban cultivation, agricultural tracts, and even near urban settlements (Mahmood et al., 2013).

1.3. DIFFERENCE BETWEEN INDIAN AND CHINESE PANGOLIN

Indian and Chinese pangolins are two distinct species with distinct morphologies that can be seen under close inspection (Table 1). The Indian Pangolin is larger in size (length: 100-120 cm) and weight (8-13 kgs), with yellowish-brown scales on the body. Its faint pinkish-white skin is covered dorsally with a suit of 11-18 rows of scales. The eyes are small; the ears are slits in the skin with small ear pinna (Menon V. 2003). The Chinese Pangolin is smaller (length: 70-100 cm) and lighter (2-8 kg), with large pentagon-shaped scales of dark brown colour. It has 15-18 rows of overlapping scales and hair, a very unusual combination in mammals (Department of National Parks and Wildlife Conservation (DNPWC), 2019). The tongue can protrude 8-10 cm beyond its lips and a shorter tail that narrows towards its naked tip. A very pronounced ear pinna is the major external anatomical difference between this and the peninsular Indian Pangolin (Menon V. 2003). The difference between Indian and Chinese pangolins may also be determined by their scale morphology, as Chinese pangolins (*M. pentadactyla*) have prominent fully grown scales that are pentagon-shaped, whereas, Indian pangolins have broad rhombic/scapular-shaped scales.

Table 1: Morphological description of the Chinese Pangolin: (Cumulative measures collected from various sources)

Growth stage	Body weight approx.	Body length (cm)
Neonates (newly born)	80-180g	18.5-26.5
Juvenile	2-3kg	35-60
Adult	2-8 kg	70-100

Source: Zhou et al., (2012), Khatiwada, AP (2016), Cota-Larson,R.(2017), DNPWC (2019).

**Table 2: Morphological description of the Indian Pangolin:
(Cumulative measures collected from various sources)**

Growth stage	Body weight	Body length (cm)
Neonates	160-235g	25-30
Juvenile	2-5.3 kg	50-70
Adult	8-21 kg	100-120

Source: Grzimek., (1990), Cota-Larson,R.(2017), Rasailys et al.,(2019), DNPWC (2019), Algewatta, HR. et al., (2022)

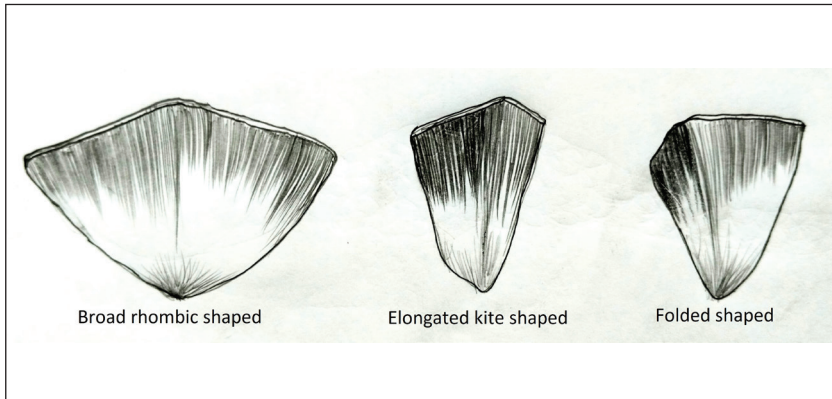


**Figure 3: Scales types in Indian pangolin (*Manis crassicaudata*)
(Adapted from Algewatta HR, Perera P, 2022)**

The following are the morphological differences between Chinese and Indian pangolins:

Sl.No.	Chinese Pangolin	Indian Pangolin
1	The adult Chinese Pangolin is smaller (70-100 cm) in size and weight (2-8 kg).	Adult Indian pangolin is bigger than Chinese pangolin in size (100-120 cm) and weight (8-21 kg).
2	External ears are well developed.	External ears are not well developed or smaller than Chinese Pangolin.
3	The row of scales are 15-18 in middle part of the body.	The row of scales are 11-18 in middle part of the body.
4	The scales are hard, sharp and dark brown in colour.	The scales are hard and sharp but yellowish brown in colour.
5	Total body scale count is 527-581 scales.	Total body scale count is 444-532 scales
6	Large scale count is between 29-35 and the ridge count is 26-31 scales.	Large scale count is between 40-53 and the caudal scale range between 30-43 scales.

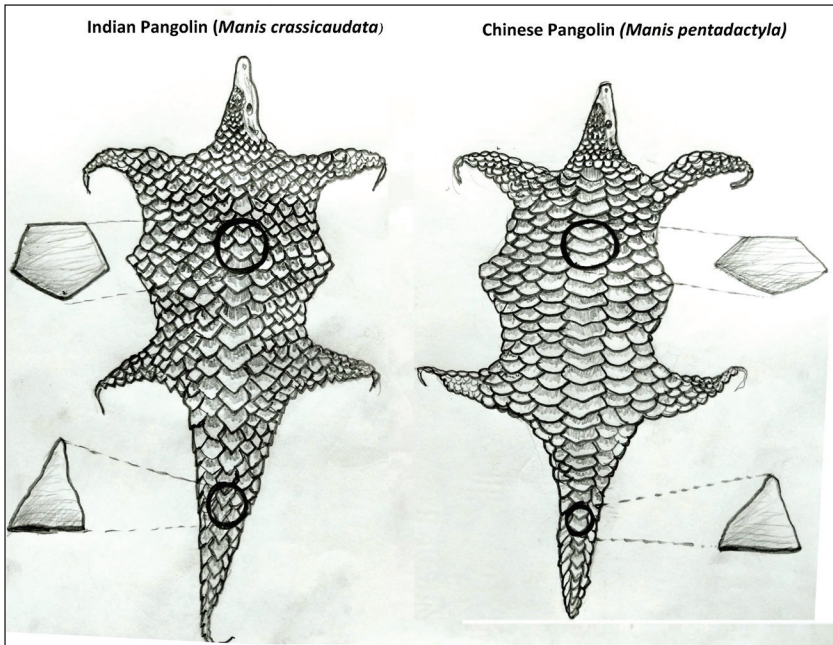


Fig. 4: Scale morphology difference between Indian and Chinese pangolin (Adapted from P. Priyambaba, G. Jabin, A. Singh et.al., 2021)



Fig. 5: Chinese pangolin (Manis pentadactyla)



Fig. 6: Indian pangolin (Manis crassicaudata)

1.4. CONSERVATION STATUS

The Chinese pangolin (*M. pentadactyla*) has been listed as Critically Endangered (CR) and the Indian pangolin (*M. crassicaudata*) as Endangered (EN) in the IUCN Red List since 2014, because of the rapid decline in both species' populations. International trade restrictions on pangolins and their parts and derivatives date back to 1975 when the Sunda, Indian, and Chinese pangolins were added to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II, and the Temminck's Pangolin was added directly to Appendix I. All pangolin species were listed in Appendix II in 1994 and were later transferred to Appendix I at the 17th Conference of the Parties (COP17) CITES meeting in Johannesburg, South Africa, in 2016 (Heinrich et al., 2017).

CITES recognised the lack of sustainability in the pangolin trade as early as 1988 when three Asian pangolin species were included in the Review of Significant Trade Processes (RST). In 2013, all remaining species were added to the RST. Recommendations were made during the RST's preliminary phase, as well as Phases I (1992) and IV (1999), including increased vigilance among pangolin-trading Parties (Challender et al., 2015). Although the Parties and the CITES secretariat considered these to be implemented, concerns about the long-term viability of pangolin exploitation have persisted since 2017. The commercial international trade in wild pangolins and their parts [including pangolin scales as Traditional Chinese Medicine (TCM) drugs] has been prohibited since the inclusion of all eight pangolin species in Appendix I, which went into effect in January 2017. Domestic trade is largely prohibited in the majority of range states, with the exceptions of China, Gabon, and Sierra Leone (Zhang et al., 2017).

In India, trade in both species of pangolin is prohibited by law, and Indian and Chinese pangolins are listed in Schedule I of the Wild Life (Protection) Act, 1972, which provides the highest level of protection to both species of pangolins by prohibiting hunting, trading, or any other form of exploitation of pangolins or their body parts. Also, the CITES appendices are included in Schedule IV of the Wild Life (Protection) Amendment Act, 2022, which firmly outlaws any type of foreign

commerce of pangolins and derivatives of pangolins and their body parts as they are listed under Schedule IV Appendix I. Any such actions taken that are prohibited by law would result in a prison term of three to seven years and a fine of at least 25,000 INR. In case of committing a second or subsequent offense, imprisonment punishment is not less than three to seven years and a fine which is not less than one lakh INR. Despite the fact that they have received significant conservation attention through policies and laws, pangolins continue to be threatened with extinction due to poaching and the trade of their body parts.

Table 4: Conservation status of pangolin species in India.

Species name	IUCN Red List	CITES Appendix	Wild Life (Protection) Act, 1972
<i>M. crassicaudata</i>	Endangered (EN)	Appendix I	Schedule I
<i>M. pentadactyla</i>	Critically Endangered (CR)	Appendix I	Schedule I

1.5. THREATS TO THE SPECIES

Pangolin populations are declining throughout their range. This is attributed to increased offtake, as evidenced by the number of seizures and the global demand largely from Southeast Asian countries for pangolin body parts, primarily the scales (Wirdateti et al., 2022). Pangolin scales are made of keratin (that also makes up human hair and nails) and are considered to have medicinal properties such as promoting blood circulation, stimulating lactation, reducing swelling, and expelling pus. Scales are sold in TCM markets, pharmacies, and retail shops either raw or processed (e.g. fried), or as ingredients in manufactured TCM drugs and remedies (Clement et al., 2022). As per the Trade Records Analysis of Flora and Fauna in Commerce (TRAFFIC) reports, approximately 119 pangolin seizures were recorded in India between 2009 and 2018, and it is estimated that 7500 individuals were hunted

from the wild. The northeastern part of India has been identified as the pangolin trade hub (Ved et al., 2020). Pangolin meat is consumed locally in India and hunted primarily for its scales and meat, which are valuable in both the commercial market and traditional medicine. Not only are global illegal trafficking of pangolins and demand in local illegal market threats to the pangolin species that live in India, but so are habitat degradation, fire, drought, low conservation priority in protected areas, and a lack of knowledge about the species' population and ecology (DNPWC, 2019).



Fig. 7: Confiscated seven skins of Chinese pangolin from Assam, North East India.

1.6 METHODS OF HUNTING

Pangolin hunting techniques vary among indigenous peoples in India. Commonly water, fire, hunting dogs, fire guns, and snares are all used in this strategy (Katuwal, 2016). Water (from the nearest available water source) is poured inside the burrow until the pangolins come out, after which they are easily captured and killed. When indigenous people set fire to the forest for agriculture, pangolins' scratch marks are vividly visible and easily trackable to their burrows. Another technique is to fill the burrows with smoke so

that the pangolins inside suffocate to death and are dug out. Hunters use dogs to identify burrows in which pangolins are actually present.

When pangolins are detected, they are usually dug out of their burrows using a pickaxe and spade. Firearms such as muzzleloaders and kartoos (hindi for cartridges) are used to hunt pangolins if they are encountered in open areas. This hunting tactic is usually in winter when the grasses are low and easy for hunters to spot pangolins. The defense mechanism of a pangolin is to curl up into a ball but while the hard scales are effective in protecting it from other predators in the wild, unfortunately, it makes it easier to get captured by humans.

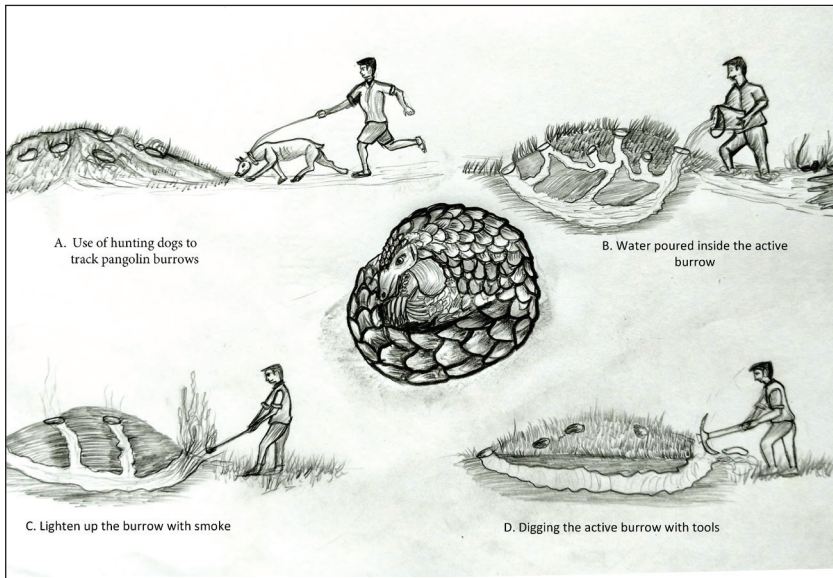


Fig. 8: Sketch of a few common hunting methods of pangolin in India.

2. ILLEGAL WILDLIFE TRADE OF PANGOLINS

2.1. THE GLOBAL SCENARIO

Illegal wildlife trade is highly destructive with serious consequences for a wide range of animal and plant species (Challender et al., 2015). It is estimated to be one of the most lucrative transnational crimes, alongside drug, human, and arms trafficking, and it frequently involves highly organised criminal networks (Wyatt 2013; Nellemann et al., 2016). Pangolins (genera *Manis*, *Phataginus*, and *Smutsia*), a once-obscure taxon with little conservation or policy significance, have become one of the most well-known examples of the illegal transnational wildlife trade, alongside elephants, tigers, and rhinos. Pangolin trade, both international and domestic, is now recognised as the most significant impediment to conservation, for both Asian and African species (Zhang et al., 2017).

Pangolins are frequently cited as the most heavily trafficked wild mammals in the world, with estimates of over one million animals taken from the wild between 2000 and 2013. (Challender et al., 2014). According to TRAFFIC International's global pangolin assessment report, from 2010 to 2015, a total of 1270 seizure incidents were reported globally, including the confiscation of at least 46760 individual pangolins and approximately 81613 kilograms of pangolin scales and body parts. Every year, an average of 33 countries and territories get involved in international pangolin trafficking. Notably, each year, an average of 27 new trade routes was identified, demonstrating that wildlife trafficking occurs through a highly mobile trade network with constantly shifting trade routes. The seizures involved 67 countries and territories spread across six continents, demonstrating the global nature of pangolin trafficking, which is not limited to Asian and African range countries (Heinrich et al., 2017).

Although pangolins are poached for a variety of reasons, depending on the local context and prevalent consumption patterns, evidence suggests that African pangolins have been the focus of the majority of international pangolin trafficking in the last decade. It is thought

to be due to population declines in Asian pangolin species such as the Indian, Chinese, and Malayan pangolins, facilitated by increasing economic ties between East Asia and many African nations. India, since 1990's (as per seizure reports) and even now remains a source country for pangolin scales and body parts in order to meet the demands of international markets (Heinrich et al., 2017).

Zero export quotas (An export quota restricts the maximum amount of a product's permitted exports) were established in 2000 for Asian pangolin species whose populations had been severely depleted due to the skin and meat trade. These zero quotas may have contributed to the skin trade's decline, but despite population depletion, sourcing from South-East Asia (primarily from Indonesia, Malaysia, and Thailand) continued in large quantities until 2013, when it began to decline significantly (UNODC, 2020).

There is now evidence of a rapidly expanding intercontinental trafficking of African pangolins to Asian markets, facilitated by growing economic ties between East Asia and many African countries (Challender et al., 2016). It is widely assumed that Asian demand, particularly in China and Vietnam, drives pangolin trade (Challender et al., 2014), (The use of pangolin scales in traditional medicine, particularly TCM, accounts for a significant portion of the demand that drives this trade, pangolin scale is used in several other African and Asian traditional medicine systems for instance, in India, Pakistan and Nigeria (Clement et al., 2022). Demand has also been demonstrated in non-range countries such as the United States of America (USA) and some European countries, and Japan (Heinrich et al., 2016).

The most common international pangolin trafficking destinations were identified as China and the USA. China, on the other hand, was the primary destination for large-quantity shipments of scales and of whole animals. (Heinrich et al., 2016).

The web of illegal wildlife trade of pangolins and their body parts spans India including northeastern states. Manipur and Mizoram have been identified as major exporters and transit points for pangolin species in India, contributing to international trafficking (Nijman et al., 2016).

Pangolins from throughout India are being slaughtered for their scales, which are subsequently shipped to Myanmar from bordering states of India and eventually to the known destination China's Yunnan region (Zhang et al., 2020).



*Fig. 9: WTI assisted international partners in the seizure of Sunda pangolins (*Manis javanica*) in the source country Indonesia.*

2.2. ILLEGAL TRADE IN INDIA

Hunting and poaching for local consumption (e.g., as a protein source and an ingredient in traditional medicine) and international trade are major threats to pangolins in India (Challender et al., 2014). Pangolin body parts are still used in traditional medicines in India (Mohapatra R. et al., 2015). For example, Mahawar and Jaroli (2008), reported 109 animal species with 270 uses in traditional medicine in various parts of India, including pangolins. Indigenous communities such as the Paudi Bhuanya tribe of Odisha, the Biate tribe of Assam, the Katkaris folk of

Maharashtra, the Gond tribe of Madhya Pradesh, the Mizo ethnic group of Mizoram, and the Nyishi and Galo tribes of Arunachal Pradesh are said to use pangolin meat, bile, scales, and claws. Although the use of pangolin body parts in these applications is centuries old, pangolin exploitation for these purposes is illegal. Unfortunately, because so little is known about the pangolin population status in India, it is difficult to determine whether pangolin offtake for these purposes is sustainable. However, if an offtake for traditional medicinal purposes happens concurrently with exploitation for national and/or international trade, it becomes unsustainable (Mohapatra R. et al., 2015).

According to the TRAFFIC report released in the year 2022, more than 330 tonnes of pangolins and their parts were seized through enforcement action in Asia from 2015 to 2021, indicating a severe threat to Asian pangolin species such as the Indian and Chinese pangolin. India had the most recorded seizures, with 287 enforcement actions out of a total of 1141 recorded incidents. A very recent report mentioned that from 1991 to 2022 a total of 426 seizures related to pangolins happened in India that involved an estimate of 8,603 pangolins hunted from the wild. Most of the seizures were reported in Central India (Lalita Gomez et al., 2023). Given the high number of seizures in India, it is assumed that many unorganized trafficking groups are involved in the pangolin trade. Pangolins are still unknown to the majority of Indian citizens and are thought to be a very rare and unique species. However, the quantity of pangolin body parts seizures in India is less than in African countries which indicates that the chances of a highly organized network of pangolin traffickers are less in India.

The linkages of pangolin with the coronavirus have raised their profile in the world including in India, providing hope for a complete stop to the trade of this endangered species.



Fig. 10: A skinned Chinese pangolin for consumption purposes in Assam.

2.3 PANGOLIN AND THE COVID-19 PANDEMIC

The coronavirus outbreak in 2020 demonstrated a failure in ground-level approaches to combating wildlife crime across multiple countries, at a high cost. The link between the coronavirus and the consumption of wildlife products had an impact on those involved in the illegal wildlife trade (IWT). While a near-halt in human activity impacted the economy and the global environment, as evidenced by perceptible improvements in ambient air and freshwater quality and unrestricted movement of wild animals, the overall result of these changed circumstances was not always favorable for wildlife conservation. Several studies have suggested that such loss of livelihood, combined with increased human confinement and limited conservation enforcement, may have increased the likelihood of wildlife poaching inadvertently. Poaching increased in southern African parks during the lockdown (Aditya et al., 2021). Similar patterns have been observed throughout Asia, including India (Dalton, 2020).

Because SARS-CoV-2 is closely related to a pangolin coronavirus (pangolin-CoV2020), trafficked Malayan pangolins are likely to have played a significant role in SARS-CoV-2 transmission (Zhang et al., 2020). When several reports emerged providing compelling evidence of pangolin trade links with the COVID-19 spread, there was uncertainty about the impact on pangolin illegal trafficking. Many source countries and wildlife conservationists hoped for a complete halt to the pangolin trade during and after the lockdown. Though recent studies have shown a decrease in the illegal trade of pangolin and its body parts based on seizure records, it does not signify a complete cessation of the heightened demand originating from South Eastern countries, notably China.

To control the spread of the COVID-19 virus, several countries, imposed lockdowns, which had a positive impact on virus control but a significant negative impact on wildlife, especially pangolins which saw an approx. 53% jump in seizure cases. The lockdown was implemented in India in four phases, from the 25th March to the 31st May, followed by implementations of varying lockdown relaxations via 'Unlock 1.0' (1 June-30 June), 'Unlock 2.0' (1 July-31 July), and subsequent versions. Ever since the COVID-19 pandemic and nationwide lockdown began in March 2020, there has been an increase in anecdotal evidence of pangolin hunting and trade (Aditya et al., 2020). According to a study conducted pangolin seizures during the lockdown contributed 20-25% to the overall 117 reported incidents between January 2018 and August 2020, based on online media reports on pangolin seizures across the country. When only the reported seizures from the COVID-19 lockdown months (March-August) of 2020 were compared to the same period in 2018 and 2019, 29 pangolin seizures were reported in 2020, 19 in 2019, and 8 in 2018, indicating a statistically significant increase from 2018 to 2020. During the lockdown, the states of Maharashtra and Odisha had the highest number of pangolin seizures (Aditya et al., 2020).

Despite receiving attention following the coronavirus's discovery, pangolins were hunted for consumption, and to stock their body parts for sale. The recent seizures of 7 tons of pangolin scale consignments in Nigeria (Charles A. Emogor et al., 2021) demonstrated the extent of pangolin scale trafficking even after the virus that caused the pandemic was linked to it.

2.4. ILLEGAL TRADE IN CYBERSPACE

People can access and use websites on the open web every day. Some of the largest online markets for endangered species can be found in cyberspace (Lavorgna, 2014). Evidence of wildlife crime is widely available on the internet and private platforms, and law enforcement agencies are either unwilling or unable to respond appropriately. This reflects a larger issue in combating cyber-enabled crime: criminals are on the internet, but wildlife enforcement agencies are way behind due to a lack of cybercrime control facilities and lack of expertise. Reasons for this include under-resourced responses to cybercrime, a lack of explicit mandates to address it, and the absence of investigative authorities. This situation manifests inequitably across the globe. While wealthy countries have the most internet users, they also have the most resources to combat online harms. Within this broader crisis, the online trade in endangered species is easily overlooked, leaving a gap in the global response that allows wildlife traders to openly seek customers online, market goods, conduct transactions, and stimulate demand (Global Initiative Report 2021).

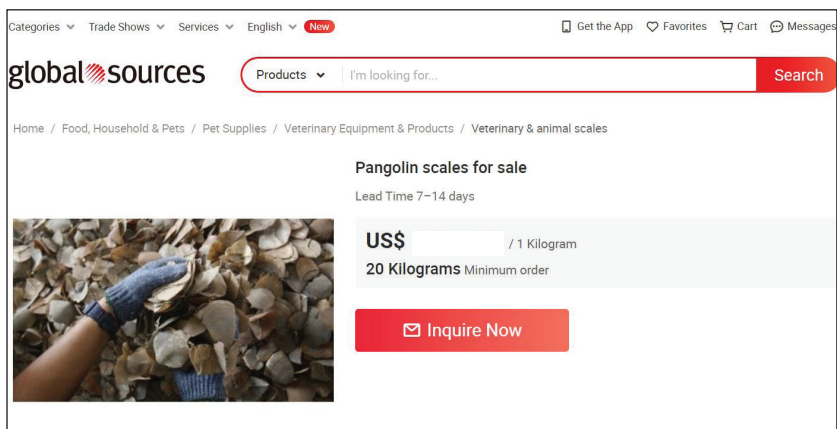


Fig. 11: Pangolin scale on sale on an online website.

The internet has emerged as a new vital platform for the trade of wildlife (Lavorgna, 2014). According to recent research, the internet is increasingly being used for the illegal trade of various forms of wildlife, including birds, mammals, and even plants such as orchids (Hinsley et al., 2015). The historical method of wildlife trafficking is rapidly evolving as a result of developing technology and the global reach of the internet. Cyber wildlife crime has grown in most countries around the world, and it is happening right in front of our eyes on open-source platforms, social media, and hidden under our nose private websites using cyber securities. According to the Global Initiative 2022 study, over a six-month period (April 2021-October 2021), a total of 924 online advertisements were discovered, with nearly all of them being classified. The majority of advertisements were placed on Chinese-language websites, many of which offer international shipping. As a result, pangolin-containing remedies and incense are available, which shows that rather than selling raw pangolin articles, they have graduated to value -added products. Scales may be imported and sold to local consumers in European and North American countries. Nearly a thousand detections of retail websites purportedly selling pangolin-derived TCM drugs, wine, and incense, as well as advertisements for raw and processed scales and body parts, were discovered.

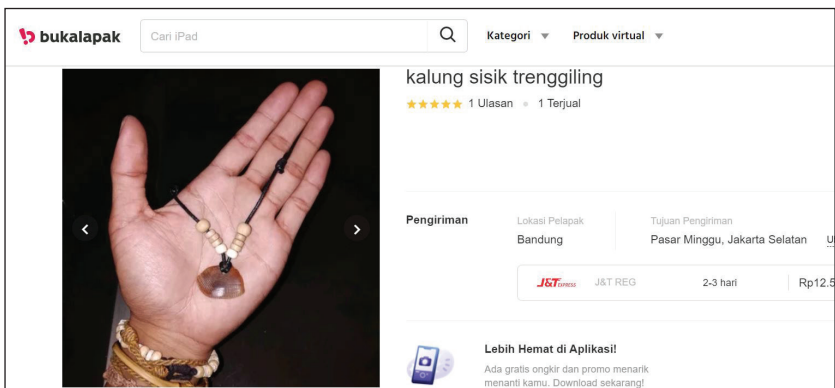


Fig. 12: Pangolin scale pendant on sale on an Indonesian online website.

The results of a recent International Fund for Animal Welfare (IFAW) study on cyber wildlife crime in four countries were shocking, with 11,772 protected species identified in online marketplaces and social media platforms, including 21.85% of Appendix I species including pangolins. Illegal wildlife trade (IWT) is growing in India's cyberspace, where it is difficult to determine the source and identity of a person, which is a major concern for wildlife protection. IWT is entering a new era as a result of cyber wildlife crime. In India, the new growing trend of using cyber tools to trade illegal wildlife articles and live native species is ramping up, and it's not far away from becoming a cause of extinction for many wild animals, including India's pangolin species (Tomar et al., 2021).

2.5. SOCIAL MEDIA PLATFORMS

The social media platform has an unexpected global reach, as our country is focusing on becoming "Digital India" and expanding its reach to every corner of the country, which may have caused a negative impact on wildlife. Wild animal trade is thriving on social media platforms, and many national and international traders communicate online to find potential buyers for wild animal species. Social media platforms such as Instagram, Facebook, YouTube, Telegram, and WhatsApp have evolved into a new marketplace for sellers and buyers, allowing one person to connect with hundreds of users through a single group and conduct open auctions without hesitation or fear.

Many exotic pet trade groups also post Indian wildlife species for sale on occasion, under the guise of exotic pets. Private website provider companies have made it possible for people to create their own e-commerce shop website in order to expand their trade reach. However, this tool is also becoming profitable in the illegal trade of wildlife articles. Many superstitious belief items, astrology items, and even pet shops selling wildlife articles like Hatha Jodi, sea fans, protected sea shells, and the most trafficked wild mammal, pangolins are being sold online.

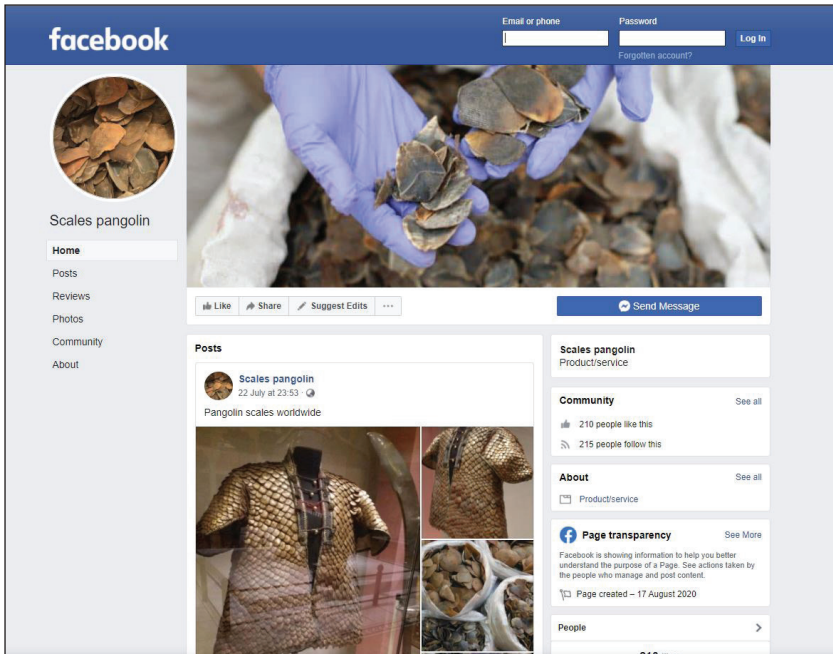


Fig. 13: Pangolin scales on sale on a Facebook page.

3. WTI'S CONTRIBUTION IN COMBATING IWT OF PANGOLINS

In collaboration with communities and governments, the WTI has nine pillars known as big ideas that serve to conserve wildlife and its habitat as well as work for the welfare of individual wild animals. One of WTI's big ideas is 'Enforcement and Law,' which aims to combat key wildlife crime and reduce poaching or trade in at least six taxa or geographies. To combat against Illegal trade, WTI under its Wildlife Crime Control Division, provides assistance to various enforcement agencies in India. The Division focuses on trade control of specific taxa, such as pangolin, in specific geographical ranges of the country. To disrupt the supply-demand chain, the project is also focusing on demand reduction by increasing awareness about the ecological importance of the species through posters/leaflets and strengthening enforcement activities to instill fear of prosecution among IWT poachers.

WTI has been working to combat the illegal trafficking of both the Indian and the Chinese pangolin, and has assisted enforcement agencies in enforcement actions against the illegal trade of pangolins in India by providing intelligence, manpower, and legal assistance throughout the country. Since 2018, WTI team has noted a surge in the illicit online trafficking of live pangolins and pangolin body parts within India. This alarming trend involves not just the transboundary organized criminal networks but also local individuals seeking to make profit by selling pangolins and its derivatives, thereby posing significant concerns for pangolin conservation within the digital realm.

3.1. INVESTIGATION ON SOCIAL MEDIA PLATFORM YOUTUBE

Background

It is well known that YouTube is the most popular online video streaming platform in the world, as well as the second most visited website after Google. In India, over 265 million people use YouTube to view, upload, and download video content for news and entertainment, and the platform has recently emerged as a hub for online IWT networking.

Over the last year, the WTI's online IWT monitoring team has been observing YouTube channels to monitor lesser-known IWT species. Hundreds of videos about astrology, superstitious beliefs, live wild animals, wildlife articles for sale, promoting wildlife trade, and other subject matters are available on this platform. However, it was shocking to discover a well-established wildlife trade market for the most trafficked wild mammal, pangolin, on YouTube.

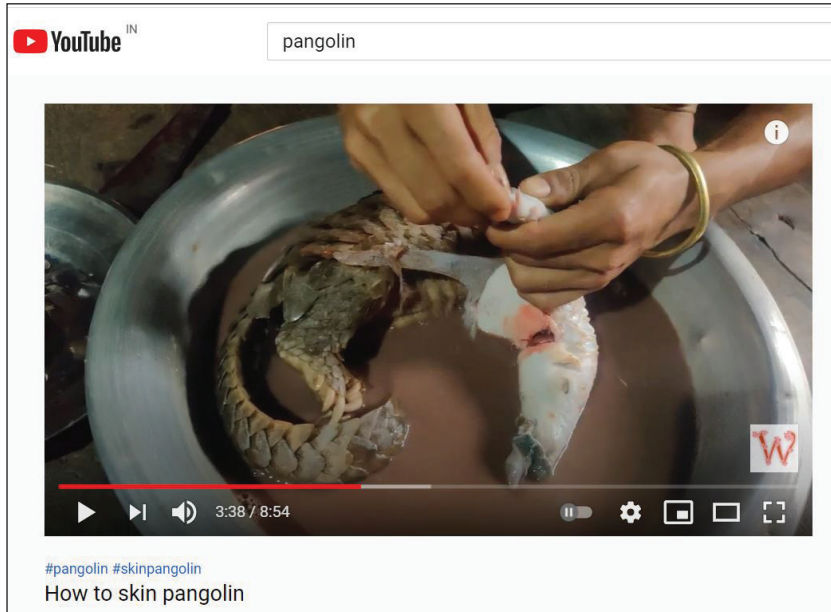


Fig. 14: YouTube video showcasing pangolin skinning.

Method

A dedicated search was carried out on the YouTube platform, using keywords for pangolin trade such as pangolin tester, pangolin power, pangolin scale, pangolin for sale, and pangolin scales on sale. A few Hindi keywords 'bajrakit khipri', 'sallusaap chilka', and pangolin in regional names were used to search the content. The videos and the relevant suggestive videos that resulted from the search of the above-mentioned keywords were also taken into consideration. All the information was

collected only from publicly available open-source information, and there has been no violation of privacy. A dedicated member of WTI's cyber wildlife trade monitoring team spent approximately 240 hours (two dedicated hours per weekday for six months) gathering and analyzing the collected data. The suspected YouTube videos were recorded using the system's built-in screen recorder. The collected data was managed in a Google spreadsheet, and basic analysis was performed with the same software. The study's actionable intelligence was shared with the central wildlife enforcement agency Wildlife Crime Control Bureau (WCCB), which took appropriate action. Following the completion of the investigation by the enforcement agency, the datasheet of collected video links was shared with YouTube in order for the links to be removed from their server.

Result

Based on the action-oriented research, the team found more than 19 YouTube channels, which had uploaded 50 videos related to pangolin trade publicity, 30 of which were of live pangolins and 20 of which were of pangolin scales. The investigation reveals the rising popularity of YouTube videos over time. The first video detected was published in 2011, and in one decade it is increased by 12 videos uploaded in 2021. The recorded YouTube videos show an increase (Fig. 11) in the use of the internet for pangolin trafficking, which could be due to the country's lockdown during the pandemic.

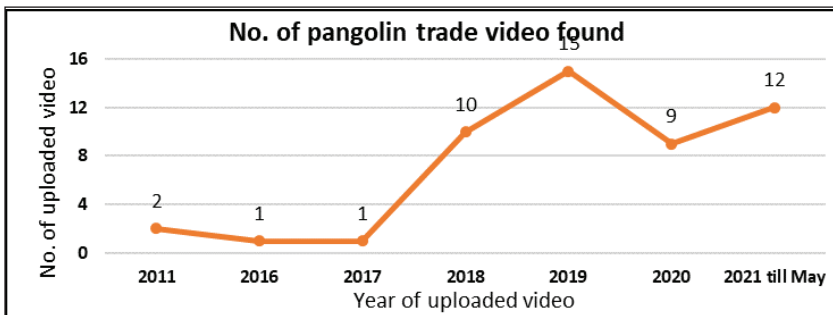


Fig.15: Frequency of pangolin trade video found on YouTube.

These 50 uploaded videos were viewed by over 1.8 million people and received 1682 comments, among which was the hidden trade market. It was discovered that live pangolins and pangolin scales were being traded in the video comments section. Each video's comment section was scanned, and it was found that 24% of the comments were solely for trade purposes, with 9% for sale and 15% for buying. Buyers and sellers left their contact information in the comment section and waited to connect with potential buyers and sellers. The comments were mostly straightforward, with no code word precautions or fear of the law, such as 'I have the pangolin call me on this number,' 'I have the original and in huge quantity call on WhatsApp,' etc.

To identify the cyber poachers, the team collected dropped contact numbers by users in the comment channel, yielding 183 individual contact numbers, of which 62% dropped their contact number to buy pangolin/pangolin scales and 38% users to sell, and identified 6 international numbers from Pakistan, Indonesia, and Nepal as seller, and Bangladesh, Iraq, and the Czech Republic as buyer. Bihar, Andhra Pradesh, Odisha, and Madhya Pradesh had the highest number of buyers and sellers.

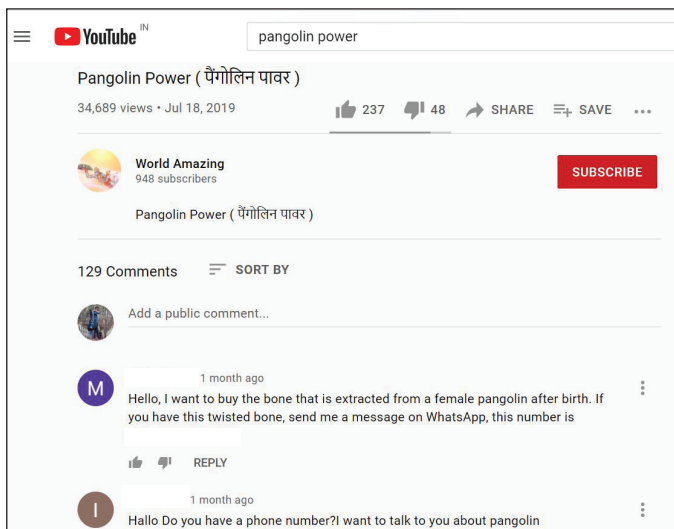


Fig. 16: Comment section of a YouTube video on pangolin trade.

Observation and Actions

To confirm the authenticity of the information gathered during the investigation of the YouTube channels, the investigation team shared the intelligence with WCCB, the nodal enforcement agency for the Government of India, which conducted two major operations on IWT of Chinese pangolin in the north-eastern India, Assam and Meghalaya based on the intelligence. During the investigation of contact information, it was discovered that the trader is not only involved in pangolin trade but also has connections with local sellers of other wildlife items such as tiger skin, leopard skin, elephant tusk, tokay geckos, coral species, red sand boas, birds and turtles. Based on the investigation, WTI has assisted central and regional enforcement agencies in conducting a total of eight enforcement operations on the illegal trade of pangolins across the country, three of which resulted in the seizure of Chinese pangolin body parts in the states of Assam and Meghalaya, and five of which resulted in the seizure of Indian pangolin body parts in the states of Himachal Pradesh, Telangana, West Bengal, Odisha, and Maharashtra.

The investigation intelligence not only aids in the fight against IWT of *M. crassicaudata* and *M. pentadactyla*, but also resulted in an international enforcement operation in Jakarta, Indonesia on the illegal trade of Sunda pangolin (*M. javanica*) scales, which resulted in the arrest of three wildlife traffickers in possession of 105 kilograms of *M. javanica* scales.

Even after several enforcement operations based on YouTube intelligence were conducted and published on digital media, the trade channel in the comments section remained active. WTI sent an official request to YouTube in December 2021 to remove videos involved in the pangolin trade to end the trade channel established through the social media platform.

YouTube has blocked 61 uploaded videos from the country domain and suspended several YouTube channels in response to the request. The action taken against the uploaded questionable links has effectively

eliminated the possibility of establishing new trade links between buyers and sellers via the social media platform.

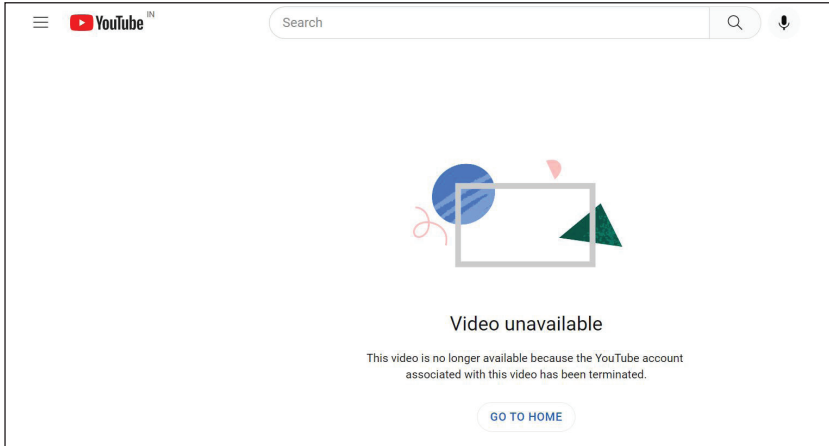


Fig. 17: The removed video of the illegal trade of pangolin on YouTube.

3.2. ENFORCEMENT OPERATIONS

The core idea of WTI's enforcement operations in India has relied heavily on law and enforcement. Over the last twenty five years (since 1998), WTI has assisted central and state enforcement agencies in conducting 25 successful enforcement operations in 12 states of the country largely in central India on the illegal trade of Indian pangolin and Chinese pangolin in northeastern states, resulting in the confiscation of 11 live pangolins (Six *M. crassicaudata* and five *M. pentadactyla*), approximately 182.61 Kilograms of pangolin scales (126 Kgs *M. crassicaudata* scales and 56.61 Kgs *M. pentadactyla*), seven skins of Chinese pangolin and 38 claws of Indian pangolin with the arrest of 67 wildlife traffickers from twelve states the country that led to the crackdown on several unorganized and organized IWT nexus.

WTI's team dedicated to monitoring cyber IWT is proactively monitoring social media platforms to identify pangolin-related activities online. Since the start of 2021, WTI, in collaboration with enforcement agencies, has

conducted ten enforcement operations targeting pangolins' illegal trade in India. These actions are guided by intelligence gathered from WTI's cyber spotter network and cyber illegal wildlife trade monitoring efforts. Of the ten, three major enforcement actions have been taken on the trade of Chinese pangolin in India's North Eastern states of Assam and Meghalaya. After many years, the enforcement actions resulted in the confiscation of large quantities of Chinese pangolin scales, as well as the detection of enforcement officials' involvement in the illegal trade.

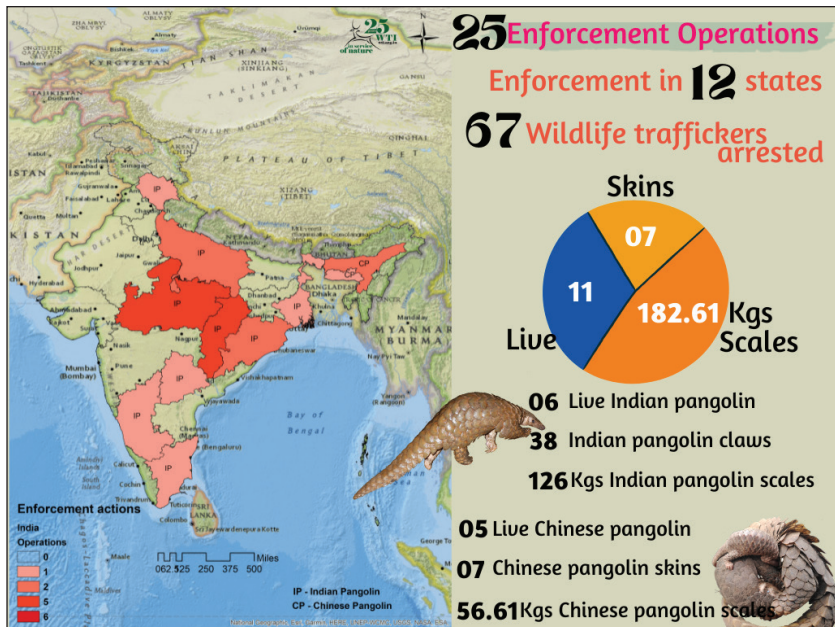


Fig. 18: Summary of enforcement operations assisted by WTI.



Fig. 19: International wildlife trade enforcement actions assisted by WTI

Because cyberspace knows no national borders, the WTI cyber monitoring team has discovered a few illegal pangolin trade leads in other source countries such as Indonesia, Uganda, Malawi, and Cameroon. WTI has collaborated with the concerned agencies of the detected pangolin trade countries and assisted international agencies in eight enforcement actions, thanks to the support of WTI's international partner IFAW. Outside of India, mostly in Indonesia and Cameroon, enforcement actions have resulted in the arrest of 13 illegal traffickers, including a few mastermind cyber poachers, as well as the discovery of a Sunda pangolin trade nexus in Indonesia.

3.3. A CITIZEN SCIENCE INITIATIVE TO COUNTER CYBER IWT

As the illegal trade in wildlife flourishes in cyberspace in India, there is concern about detecting and controlling cyber poachers. Every day, the cyber reach expands from developed cities to interior rural areas, and cybercrime is increasing in tandem with the expansion of the cyber network. The advancement of cyber technologies, combined with improved security protocols, makes it difficult to monitor and detect hostile illegal activity in cyberspace.

To address the growing problem of illegal wildlife trade in cyberspace, WTI devised the idea of creating a wildlife crime reporting tool through which anyone can report a potential wildlife crime occurring in cyberspace as well as on-ground in the real world.

Cyber HAWK (Hostile Activity Watch Kernel) is a Harrier model of WTI's centralized wildlife crime database and monitoring system HAWK. It is a citizen science initiative that combats illegal wildlife trade by bringing together various stakeholders and enforcement agencies, monitoring and reporting cyber IWT via a cyber-spotter network, and educating and informing the general public via a single online platform.

This android-based mobile application is designed to assist enforcement officials by filtering and sharing actionable intelligence from reported wildlife crimes via a cyber-spotter network, reducing the time and effort required by enforcement agencies to gather validated information and conduct enforcement operations based on actionable intelligence. The whistle-blower reporting IWT incidences such as pet trade, sale of bush meat, hunting/poaching, or sale of illegal wildlife articles is the cyber spotters, a virtual network of volunteers across the country/globe who provide information about suspected illegal wildlife trade into the Cyber HAWK platform using a mobile app. It will also raise public awareness about wildlife species involved in trafficking, as well as provide relevant information on the Wild Life (Protection) Amendment Act, 2022, and the exotic animals protected under schedule IV CITES appendices I, II & III of the Act.

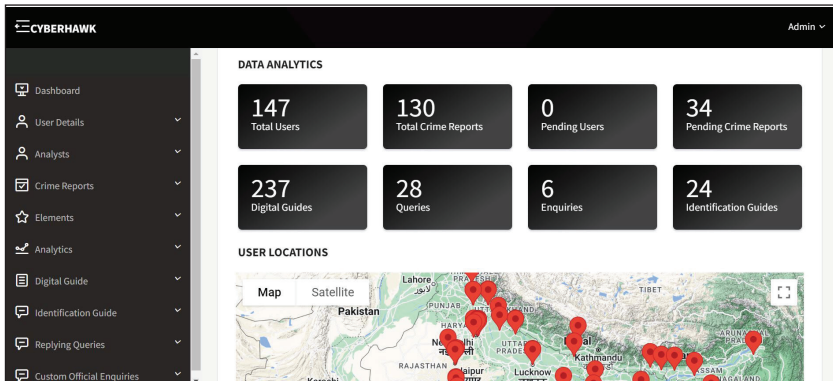


Fig. 20: The admin panel of the Cyber HAWK tool.

Since 2021, the WTI's cyber spotter network has reported 18 wildlife crime incidents involving pangolin trade in cyberspace. 13 of the reported crimes were successfully converted into actionable intelligence and action was taken with the assistance of enforcement agencies, while two reports are under investigation and three reports were stored in the dataset due to a lack of operational possibilities. The platform provides critical information from the ground and in cyberspace on the trade of the world's most traded wild mammal, as well as many other charismatic species such as the Asian elephant (*Elephas maximus*).

3.4. OBSERVATION FROM CASE STUDIES

Illegal wildlife trade enforcement actions reveal a lot about the situation on the ground and the nature of the trade. WTI has encountered a number of such incidents, which have helped us better understand the trade pattern, mode of operation, and social aspects of the IWT of pangolins. The following are the lessons learned and observations made during enforcement operations:

The myths related to pangolins: In the illegal wildlife trade, there is a widespread misconception that live pangolins can produce power., Poachers and illicit traffickers conduct what is known as the “tester test” on live caught pangolins, which demonstrates that a tester for electricity produces a positive current when it touches the pangolin's body. Similar

to this, it is a common myth that pangolin scales produce bubbles when submerged in water. Poachers gave this test the name “bubble test” to demonstrate that the scales had some sort of function. All of these actions have no basis in reality and were created by local traffickers to drive up pangolin prices in illegal markets. The WTI team was familiar with a situation in which a trader demanded one lakh rupees for four pangolin scales while claiming that they possessed power current and bubble characteristics.

Such misunderstandings have a significant impact on local illicit trade in pangolin scales and encourage local poachers to capture pangolins in the wild in order to increase their profit margins. However, they have no effect on organized international trafficking in pangolin scales. In addition to these false beliefs, pangolin scales and meat are utilized in traditional remedies in India because people here believe they have curative qualities. This is covered earlier in this publication.



Fig. 21: The confiscated wildlife articles in Meghalaya’s enforcement action.

The trade nexus: Since the north-eastern Indian states of Manipur and Mizoram were known as the pangolin trade hub from 2010 to 2015, from where the majority of scales were smuggled to China through Myanmar, this suggests that there was a well-organized pangolin trade nexus in

India. The international pangolin and tiger body part syndicate from Chhindwara Madhya Pradesh was discovered in 2014 by the Madhya Pradesh's Special Task Force (STF) led by the Chief Conservator of Forests of Madhya Pradesh STF. Following the syndicate, the Madhya Pradesh STF has conducted more than 183 enforcement operations on pangolin trafficking in India and busted a major organized key syndicate of pangolin trade. As a result of the STF's request, Interpol has issued a red notice on a key suspect of the India-China pangolin trade syndicate. Through pangolin seizures in India over the past five years, it has been discovered that there is a spike in local pangolin scale trafficking and a decline in organized nexus. This may be due to enhanced monitoring and enforcement efforts by law enforcement agencies. Through its enforcement efforts, WTI has discovered a significant involvement of both youngsters and law enforcement personnel in pangolin trafficking. Sixty percent of the 12 enforcement operations supported by WTI involved junior grade enforcement personnel from a number of agencies, including the police, Central Industrial Security Force (CISF), Assam Rifles, the Indian Reserve Battalion, and the people from the forest department. In 2022, WTI assisted law enforcement in a pangolin trade case in Raipur, Chhattisgarh, where the suspect was himself a security personnel. The case received attention because the intelligence was gathered from a YouTube comment, and the suspect learned about the pangolin trade through the internet and attempted to engage in the trade. Such involvement raised concern over pangolin conservation and IWT control in India.

The modus operandi: As enforcement agencies have improved their IWT monitoring and enforcement actions over the years, wildlife traffickers have also improved their mode of operation in the illegal trade. Because of the lack of detection and fear of law enforcement, the person-to-person trade deal was operational on the ground earlier in the 20s. The supplier of illegal products must seek a possible buyer through his contacts and meet the customer in person to exchange the commodities for money in person-to-person trade. This mode of operation is one of the best ways for law enforcement to take enforcement actions by posing as a potential buyer. Later, traffickers realized the dangers of dealing illegally in person and switched to delivery methods such as postal or courier services. In the case of money exchange, money

has given way to online transactions or dealing in bitcoins. Due to a lack of facilities for detecting illegal goods in postal services, it became extremely difficult to trace back the actual suspects in this mode of operation. Furthermore, the shift in trade from the real to the virtual world for the trading of pangolin scales has created concern among enforcement officials in tracing the original face behind the virtual ID.

The transition from the physical to the virtual world is significant in India's current IWT trade scenario. WTI has observed that the most common mode of operation is in person dealing with solid cash amounts. Even though traffickers use cyberspace to connect with potential buyers, the exchange of goods and money must take place in person. That provides a chance for enforcement agencies to take action against wildlife traffickers.



Fig.22: The live Indian pangolin confiscated in the enforcement action

Legal awareness: WTI has observed that over the years in assisting enforcement agencies in gathering intelligence, monitoring the illegal wildlife trade of pangolins, and providing support in enforcement actions across the country, the suspects involved were well aware of the legalities associated with the illegal trade in 90% of the cases. The Wild Life (Protection) Act, 1972 in India protects both the Indian and Chinese pangolin species. Although the individuals participating in the trafficking of pangolins in India may not be conscious of the Act, they are well aware that dealing in pangolins is against the law and could result in them being imprisoned. However, awareness and sensitization about the legalities surrounding pangolin trafficking must be spread throughout the country, particularly in rural areas of the pangolin distribution range.

4. CONCLUSION

According to various reports and study findings laid out in this publication, both pangolin species in India are on the brink of extinction as a result of the rapid hunting of pangolin species from the wild in order to fulfill the demand of illegal markets. WTI discovered a significant gap in knowledge among enforcement agencies about cyber illegal trade monitoring and enforcement actions on the pangolin trade. Several communities in India hunt pangolins, unaware of the legal implications, leading to inadvertent involvement in IWT. Additionally, pangolins are viewed as mythical creatures with mystical properties, fueling demand for their body parts in traditional medicine. Cultural beliefs also play a role, with pangolins being mistakenly associated with spiritual rituals. Adding to this, even the common populace led by the advent of the internet are now being engaged in the illegal trade of pangolins and their derivatives on online platforms.

All this has culminated and led to the formation of small-scale unorganized pangolin trafficking setups all over the country, where the internet is enabling this by providing a platform for people to easily buy and sell pangolins online. The WTI team has observed that the younger generation is increasingly drawn to IWT due to the allure of significant financial gains. Their heightened tech-savviness and easy access to cyberspace make them more susceptible to engaging in unlawful activities. To bolster and protect pangolin populations in India, it is imperative to focus on this issue and implement policy interventions that address the changing dynamics of IWT effectively.

Based on enforcement actions and monitoring of illegal pangolin trade, WTI formulated the following recommendations for Indian and Chinese pangolin conservation in India.

4.1. A SCIENTIFIC APPROACH TO FILL THE KNOWLEDGE GAP

The current population and distribution of Indian and Chinese pangolins in India are largely unknown due to several factors, including difficulty in finding and monitoring pangolins in the wild. There is limited knowledge

of both species in India, making it difficult for conservation management authorities to plan conservation models. More scientific research is needed in the country to fill the knowledge gap regarding pangolin species. Non-governmental conservation organizations and institutes should gather more informative data on pangolin behavior, ecology, and socioeconomic use in India. A study of pangolin smuggling will help law enforcement agencies monitor the illegal wildlife trade of pangolins and other traded wildlife.

To monitor, analyze, and respond to illegal wildlife trafficking of pangolin species, enforcement agencies should use an action-oriented research model. The case studies should be easily accessible to agencies in order to improve their understanding of the species and its trade.

4.2. DEMAND AND SUPPLY REDUCTION

Law enforcement agencies, particularly those in areas with high pangolin trade identified through seizure data, should ensure that officers are aware of the significance and relative prevalence of the illegal pangolin trade. They should be able to recognize pangolin products, methods of concealment, and transportation and be vigilant in detecting and intercepting shipments.

Through increased awareness, well-informed and targeted behavioral change in highly sensitive regions, more efforts should be made to understand and reduce demand for pangolin products traded illegally in the country as well as in consumer countries. Efforts should include a more thorough examination of the use of pangolin body parts in India to provide additional insight into the behavior change initiatives that are required to motivate consumer communities.

More research by conservation organizations, research institutions, and relevant government agencies is needed to determine what motivates illegal trade in the country, which commodities are traded, and in what quantities. This will greatly aid in identifying the role of specific people involved in the trade and high-risk areas such as transit points on national and international pangolin trafficking routes. Because of the lack of knowledge about this species in India, targeted awareness,

sensitization or demand-reduction campaigns may be warranted as alternative livelihood options for the forest and forest fringe communities that are dependent on the source generated through illegal trade.

4.3. MONITORING AND DETECTION OF PANGOLIN TRADE

Monitoring, detection, and reporting on pangolin trafficking by central and regional enforcement agencies, non-governmental organizations, and independent researchers should continue and should be expanded to regions where information on the trade is lacking. Improved monitoring and reporting should be prioritized for the growing cyber IWT in India, the communities involved in pangolin consumption and trade, and methods of operation used by organized and unorganized illegal traffickers. Cooperation from transportation and logistics companies and others involved in the movement (however unwittingly) of shipments along trade routes is also required. These companies are encouraged to share information on methods of concealment of wildlife consignments, specific routes used, and other noteworthy information to enable effective law enforcement investigations. These will aid in estimating illegal trade levels, detecting emerging trends, and influencing enforcement, conservation actions, and decision-making.

The state wildlife enforcement agency, in collaboration with all other relevant enforcement agencies in the country involved in the prevention of illegal trade in pangolins, their parts, and derivatives, should improve the reporting of all seizures to the WCCB. Seizure reports that include comprehensive accounts of actions and outcomes, seizure specifics, and prosecution details, are required for analysis of a country's wildlife trade levels and trends, as well as for a better understanding of the international illegal wildlife trade.

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GLOSSARY

CISF -	Central Industrial Security Force
CITES -	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP -	Conference of the Parties
DNPWC -	Department of National Parks and Wildlife Conservation
HAWK -	Hostile Activity Watch Kernel
IFAW -	International Fund for Animal Welfare
INR -	Indian Rupee
IUCN -	International Union for Conservation of Nature
MoEFCC-	Ministry of Environment, Forest and Climate Change
NGO -	Non-Governmental Organizations
UNODC -	United Nations Office on Drugs and Crime
RST -	Review of Significant Trade Processes
STF -	Special Task Force
TCM -	Traditional Chinese Medicine
TRAFFIC-	Trade Records Analysis of Flora and Fauna in Commerce
WCCB -	Wildlife Crime Control Bureau
WCCD -	Wildlife Crime Control Division
WPA -	Wild Life (Protection) Act, 1972
WTI -	Wildlife Trust of India

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Pangolins are unique scaly mammals that are on the verge of extinction. India is home to two pangolin species: Indian Pangolin and Chinese Pangolin. Despite their high conservation status and value in India, pangolins are hunted and traded illegally all over the country due to a high demand in illegal wildlife markets. The illegal trade which is causing a decline in pangolin populations has now spread into cyberspace, raising concerns about the conservation of the world's most trafficked wild mammal. The Wildlife Trust of India is assisting the country's enforcement agencies in combating the illegal wildlife trade of the Critically Endangered Chinese Pangolin and the Endangered Indian Pangolin and in conserving both the species.



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