

TACKLING ILLEGAL WILDLIFE HUNTING AND TRADE IN INDIA

PROBLEM-ORIENTED WILDLIFE PROTECTION
CASE STUDIES



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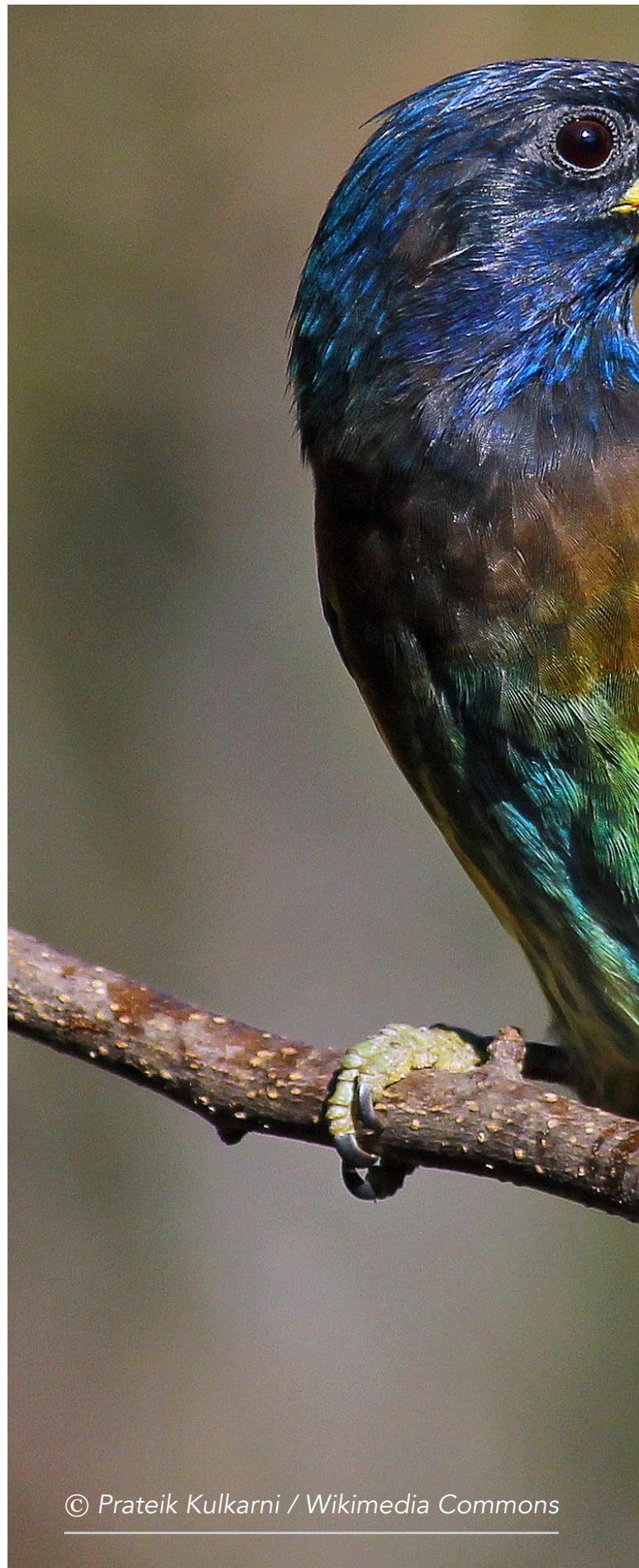
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ABOUT THE CWT PROGRAM

Wildlife Conservation Society-India's (WCS-India) Counter Wildlife Trafficking (CWT) programme aims to support government agencies by building and improving their access to information, skills, technology, and expert support to tackle wildlife crime in India. Illegal wildlife trade is recognized as a serious transnational crime with an overall turnover of billions of dollars every year, requiring a coordinated effort by various enforcement agencies to tackle it effectively.

WHAT WE DO

We work with government agencies to reduce wildlife crime and dismantle wildlife trafficking networks in India by:

- Conducting capacity building workshops for officers on effective detection, investigation, and prosecution of wildlife crime
- Providing technical support to law enforcement officers in multiple aspects of wildlife crime
- Carrying out and disseminating research on wildlife crime to refine knowledge in this field

ABOUT IWT

Illegal wildlife trade is one of the largest forms of transnational organized crime today. In India, trade in over 1,800 species of wild animals, plants and their derivatives, is prohibited under the Wild Life (Protection) Act (WLPA), 1972.

TABLE OF CONTENTS

1. ABOUT THE CWT PROGRAM	3
2. INTRODUCTION.....	6
3. SAVING AMUR FALCONS IN NAGALAND	9
SCAN:	10
ANALYSIS:	10
RESPONSE:	10
ASSESS:	12
CHALLENGES:.....	13
4. ERADICATING THE 'DANCING BEAR'	
PRACTICE IN INDIA	14
SCAN:	14
ANALYSIS:	15
RESPONSE	16
ASSESS	17
5. REDUCING POACHING OF HORNBILLS	
IN SEIJOSA, ARUNACHAL PRADESH.....	18
SCAN:	19
ANALYSIS:	19
RESPONSE:	19
ASSESS:	21
CHALLENGES:.....	21
6. SURRENDERING AIR GUNS TO MAKE WAY	
FOR WILDLIFE IN ARUNACHAL PRADESH	22
SCAN:	23
ANALYSIS:	23
RESPONSE:	23
ASSESS:	24
CHALLENGES:.....	24



Amur falcons congregated in large numbers at the Doyang Reservoir, Pangti, Nagaland on their way from Siberia to South Africa annually.
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INTRODUCTION

Illegal wildlife hunting and trade (IWHT) has emerged as a significant conservation concern that threatens the survival of thousands of wild populations. However, the response to this problem has mostly been limited to traditional law enforcement action by government agencies such as forest departments and police. These responses have rarely used a data-driven approach to tackle IWHT and are seldom designed to include monitoring and evaluations.

Emerging data from the field of crime science suggests that for successful crime

reduction, traditional measures must be accompanied by a problem analysis process, which includes conducting research on well-defined problems and implementing recommendations that allow for a diversity of intervention options. Problem-Oriented Policing (POP), which has been hailed as one such strategy, relies on the SARA process – i.e. Scan, Analysis, Respond, and Assess. Evidence suggests that POP can achieve an average crime reduction of 34% when applied to specific crimes and disorder problems (Lemieux, Pickles & Weekers, 2022). POP also provides an inbuilt

mechanism for assessing the results and tweaking the intervention in response to this assessment, giving much more flexibility to the respondents.

An offshoot of POP is the Problem-Oriented Wildlife Protection (POWP) framework that has been used to design and implement responses towards addressing wildlife related crime. The theory of POWP has emerged over the past few years and has become increasingly popular with conservation practitioners, researchers, and many enforcement agencies, who are putting it into practice. POWP appeals to many of these groups as an intuitive strategy for tackling complex problems. On close examination, one will find that practitioners in the field of conservation have, over the years, used POWP-like frameworks to address IWHT across the globe, including in India.

This document has compiled four case studies to demonstrate how the POWP-like approaches have been successfully used in India to address IWHT. We used extensive literature surveys and in-depth interviews with key stakeholders, including forest department officers and conservationists from the NGO sector, who were involved in these initiatives, to document the various facets of these case studies. We highlight how these interventions have relied on the SARA process to address complex IWHT problems. In these case studies, the practitioners have gone beyond or supplemented the traditional enforcement action to incorporate interventions that include awareness, building community stewardship, neutralizing peer pressure, and setting norms.

In the first chapter, we document the case of Amur falcons, which were captured in large numbers by local residents for meat at Doyang Reservoir, Pangti, Nagaland during the migratory season. In 2012, conservationists, media personnel, church leaders, and Forest Department

staff intervened. Interventions included increased patrolling, fostering stewardship, and mobilizing political will. As a result, the hunting of this bird stopped at the site and in neighboring areas.

The second case study documents the interventions to curb the 'dancing bear' practice in India. Sloth bears were captured from the wild from the District of Sambalpur in Odisha to supply to Kalandars, a bear dancing community. To stop this practice, NGOs intervened by rehabilitating the Kalandars by providing alternative livelihoods, thereby reducing the demand for bear cubs. At the source level, NGOs worked at Sambalpur to generate awareness about sloth bears. The enforcement capacity was also built to detect signs of capturing of cubs from the wild and registering cases. The success of the intervention lies in the fact that once a common sight, bear dancers are not spotted as commonly in India.

The third chapter documents the innovative measures taken to reduce the poaching of hornbills in Arunachal Pradesh. Hornbills were poached in and around the Pakke Tiger Reserve, Seijosa, to make traditional headgear worn by the men of the Nyishi tribe. With intervention from NGOs and the Forest Department, artificial headgear was introduced and, in time, came to be accepted by the tribespeople. To continue the momentum, other interventions, such as nest adoption programs, were also introduced that employed local residents.

The final case study, 'Surrendering air guns to make way for wildlife in Arunachal Pradesh' documents the ongoing initiative by the Arunachal Pradesh government to counter illegal wildlife hunting. Undocumented air guns are used extensively to hunt birds and small mammals across Arunachal Pradesh. Highlighting the importance of birds for ecological balance and agricultural production, the enforcement agencies,

in partnership with local NGOs, have rolled out an initiative for the surrender of airguns to make way for conservation. The Minister in charge of wildlife has initiated and championed the campaign, and the act of air gun surrender has been socially incentivised through celebration in the media to instill pride amongst various tribes of Arunachal Pradesh. This intervention is still nascent, and its long-term impacts are yet to be measured.

The interventions included in this document elucidate that a strong and nuanced understanding of the IWHT problem opens up avenues for diverse interventions. Another important lesson emerging from these case studies is that the partnership built and sustained among stakeholders (including enforcement officers and local residents) significantly impacted the interventions' success. We have also included in these chapters some of the challenges that have affected these

interventions to help demonstrate the importance of adaptability and the role of monitoring and assessment in such cases.

This is the first step towards documenting such case studies in India, and we recognize that these are in no way the only examples of successful POWP or POWP-like interventions in the country. We have encountered other remarkable cases, including - initiatives to reduce the illegal collection of marine turtle eggs in Ratnagiri, Maharashtra through active citizen participation; addressing livestock predation by snow leopards to reduce poaching; and introducing controlled legal harvest of nests of the Edible-nest swiftlet in Andamans to tackle illegal and rampant collection. We hope to document such case studies in some detail and also critically evaluate the role of POWP in curbing IWHT in India.



Amur falcons trapped for meat.
© Nagaland Wildlife and Biodiversity Conservation Trust

CHAPTER 1:

SAVING AMUR FALCONS IN NAGALAND

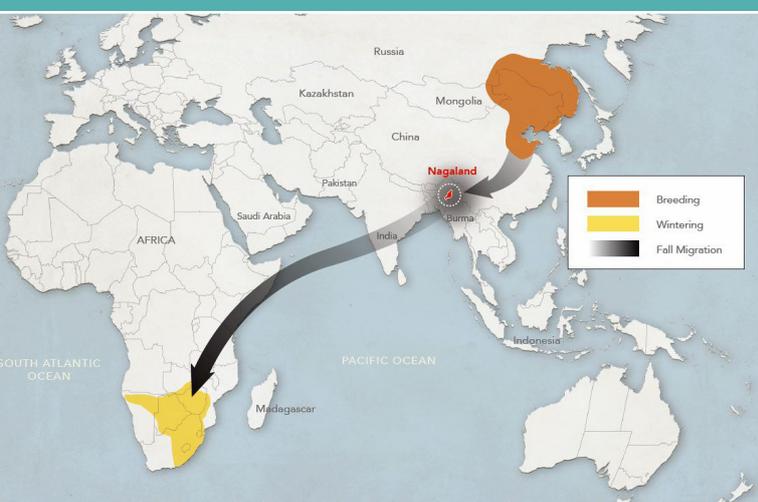


Fig. Representative map for Amur falcon migration Map by Jillian Ditner, source: BirdLife International Data Zone.

The Amur falcon (*Falco amurensis*) breeds in south-eastern Siberia and Northern China and migrates through India and over the Arabian Sea to winter in Southern and East African coasts (Dalvi, Sreenivasan & Price, 2013). It is estimated that the birds cover a distance of over 20,000 km each year during this migration. The birds are known to fly into India in large flocks and congregate across parts of northeast India, especially in the state of Nagaland for a few weeks in October and November where they rest and feed before embarking on their migratory journey further.

SCAN:

The Doyang Reservoir in Pangti village, Wokha, Nagaland had become a death trap for the migratory birds, Amur Falcon, that would stopover on their journey from Siberia to South Africa. Every year during the peak migration, approximately 12,000-14,000 birds would be trapped by the villagers every day (Sreenivasan, 2013, Conservation India, 2012). While the migration of birds had been in the memory of villagers for over 50-60 years, the mass trapping of birds was a recent phenomenon. With the construction of the Doyang Reservoir in 2002, the geography of the landscape changed and it became a magnet for these birds (Szotek, 2012), who would stop and roost in large numbers. This provided a unique opportunity to hunt the birds, and sell them for meat in local markets.

ANALYSIS:

Modus operandi:

During the day, the birds perched on the transmission lines and were inaccessible to people. The falcons would return to their roosting sites at the end of the day. This behavior provided a window to hunt the birds. Fishing nets as long as 30-40m and 10-12m tall were laid in the path of the roosting sites (Conservation India, 2012). These nets were readily available to the local fishermen, and hunting the bird was an added opportunity to earn cash. The birds would get entangled in them during dusk and dawn. Next morning the hunters would come and collect the birds from the nets, and the process would be repeated till the migration season was over (Conservation India, 2012). Once caught, the birds were sold as meat locally within Wokha district and neighboring districts of Kohima and Dimapur (*ibid*).

Opportunistic Hunting:

Hunting is a culturally accepted practice in Nagaland. The crucial difference between the mass trapping of Amur falcons and cultural hunting was the scale. Hunting with catapults and other traditional equipment would limit the number of birds that would be hunted. However, post the construction of the Doyang reservoir, the opportunity to hunt in huge numbers with minimal effort was presented, as one just had to lay down the fishing nets at roosting sites. It is important to note here that natural resources are seen as common resources in Nagaland, and as such a community member's harvest or usage of the resources is not questioned. When the interventionists spoke to the communities it was found that the villagers were unaware of the scale of the hunting, and its effects.

Identifying influencers within the community:

A sizable chunk of the population practices Christianity (Mukherjee, 2023) and the Baptist church leaders in Pangti village held considerable influence over the population. Religion plays an important role in the social lives of the Nagas. As is the custom, every week the villagers would congregate to attend church mass on Sundays.

Under the Nagaland Village and Area Council Act, 1978 each village in Nagaland has a Village Council (VC), which is democratically elected by the villagers (Shimray, 2014). It is headed by the Chairman who is assisted by *Gaon burahs* (village elder) and the Councilors. The VC is a powerful grassroots body that holds influence over the administration of the village (*ibid*). They also have the power to frame rules and regulation and bring justice to the offenders. VCs also ensure that they enforce orders passed by authorities.



Fishing nets were set on long poles along the Doyang Reservoir to trap Amur falcons.
© Nagaland Wildlife and Biodiversity Conservation Trust

RESPONSE:

Mobilizing political will :

As a first and foremost intervention, the plight of the Amur falcons was put out in the media by conservationists and researchers. The story was widely published in national and international media. This step helped garner support from many influential NGOs as well. Moreover, the negative publicity was a matter of concern for the local people in Nagaland. Immediately after the expose, the Deputy Commissioner of Wokha emphasized on the ban on hunting of Amur falcons the put out an order stating that the killing of Amur falcons will be punished (As per the Indian laws hunting of Amur falcons is prohibited). This order

became an leveraging point later with the VC. With national NGOs writing to the Ministry of Environment and Forests (Das, 2012), the state government too took notice of the situation and the Chief Minister of Nagaland threatened to stop grants to villages that were involved in falcon hunting (Rao, 2013 & TOI, 2013). This put pressure on the VC of Pangti, who reemphasized that hunting of Amur falcons was illegal and issued a fine of INR 5,000 on hunters (Rao, 2013).

Overall the situation in Pangti had harmed the image not just of the village but also Nagaland as the state. In order to course correct, mobilizing political will became easier.

Multi agency involvement:

Following the media articles about the hunting of Amur falcons in Pangti, many local, national and international NGO along with various government departments initiated activities to help stop the killing. Although these were often not coordinated (see *Challenges section*), the presence of these institutions and organizations did make it possible to have a wider diversity of responses and more funds became available for conservation activities.

Focused patrolling:

The Forest Department is the most important enforcement body when it comes to wildlife matters in India. With pressure from the media and the State Government, the Forest Department deployed protection forces to increase patrolling in the roosting areas near the Doyang reservoir (TOI, 2013). The forest officials also seized fishing nets.

Furthermore, an Amur Falcon Roosting Union, composed of local residents and supported by NGOs was set up to patrol the Doyang reservoir to prevent the hunting of Amur falcons.

Developing local environmental stewardship:

The individuals involved felt that for the long-term success of any interventions, it was essential to create a stewardship amongst people regarding Amur falcons. Here the role of the Church was important, as they invoked the Book of Leviticus in the Bible (Rao, 2013) that prohibits the consumption of birds of prey. As stated earlier, religion is an important social activity in the lives of the Nagas.

Simultaneously, a campaign was launched by a local NGO called, 'Friends of Amur Falcon' (Conservation India, 2013b). Through this campaign, a conservation

spokesperson model was created where participants ranging from teachers, church workers, village youth and even hunters were trained on communicating the message of conservation by the local NGO. Furthermore, the local NGO also created eco-clubs for children, which they could join as an extracurricular activity after school. The mascot of these clubs was an Amur falcon.

Creating economic opportunities:

Loss of income was often cited as a reason against stopping the hunting of Amur falcons. To overcome this, selected people were trained by the local NGO as bird guides and naturalists to guide birding tours. Homestays were set up as well for tourists to come and watch the birds. People who were trained as trainers were put on the payroll of the NGO.

Maximizing the opportunities provided by the biology of the bird:

The biology of the bird seemed to have worked in favor of its conservation in this case. Amur falcons roost in this landscape for 20-25 days before they continue their migration towards Africa. As such, the presence conservation of Amur falcons was time bound and did not require a major habit change such as stopping hunting of all bird species, all year round. Since the migration was short lived, the birds could be portrayed as 'guests' in the Pangti village.

ASSESS:

The biggest result of the intervention is the reduction in Amur falcon hunting from an estimated 1,20,000 per year to zero in the year 2013 and till now at this location.

The intervention also had a spillover effect (diffusion) on other villages in Nagaland and the neighboring states of

Assam (Time8, 2020) and Manipur (The Hindu, 2022), thereby creating a culture of conservation for Amur Falcons.

One indicator of success for the eco-clubs is that out of the 20-30 conservation spokespersons trained, at least one of them has been elected into the Village Council and as a result, has exercised influence over the council's decisions with respect to the conservation of Amur falcons.

CHALLENGES:

When the issue of poaching of Amur falcons was highlighted, several non-governmental organizations reached Pangti village to intervene. The foremost challenge this presented was the non-synchronization of efforts that later led to sidelining of the village council of Pangti in decision-making. The set-up of the Amur Falcon Roosting Union set by national NGOs as independent to the VC seems to have hampered direct conversations and negotiations with the village council. In other villages such as the Old Ari Village, care has been taken to not set up such a union so as to keep the interaction between the village and other bodies direct and transparent.

With the attention that Pangti village received, the residents saw conservation as an opportunity for development, as the village lacked many amenities (Aiyadurai & Banerjee, 2019). However, the developmental benefits, such as better roads, are yet to come. The development that did come, such as tourist accommodation and associated facilities created disturbance for the birds, who now roost at the nearby Old Ari Village 4 km away from Pangti.



© Nagaland Wildlife and Biodiversity Conservation Trust



A 'bear dance' performance underway by a Kalandar.
© Wildlife SOS

CHAPTER 2:

ERADICATING THE 'DANCING BEAR' PRACTICE IN INDIA

*The sloth bear (*Melursus ursinus*), also known as the Indian bear is endemic to the Indian subcontinent. It has been listed as Vulnerable on the IUCN Red List. Estimates by the IUCN suggest that fewer than 20,000 wild sloth bears remain in India and Sri Lanka. Habitat destruction and hunting threaten their populations, especially outside protected areas. In India, all hunting and capturing of the animal is prohibited by the Wild Life (Protection) Act, 1972.*

SCAN:

'Dancing bear', a 500 year-old-practice (Radhakrishnan, 2007, Kumari et al, 2016, Seshamani & Satyanarayan, 1997), was a form of entertainment performed by members of the Kalandar tribe in urban and rural areas in which bears would be made to perform for an audience. This practice has been a concern both in terms of conservation, as bear cubs were captured from the wild, and also for reasons associated with animal cruelty, since the practice involved piercing and other forms of mutilation.

Wild sloth bears in India were captured for the 'dancing bear' practice. This historic profession was the sole form of livelihood for many tribe members, who were economically and socially marginalised. Through amendments to the Wild Life (Protection) Act, 1972 in 1992, the ownership of sloth bears became illegal. However, the tradition was very much alive for which sloth bear cubs were captured from the wild from Madhya Pradesh, Chhattisgarh and Odisha by forest dwellers to supply to the Kalandars across India (Kumari et al, 2016). One key sourcing location was Sambapur, Odisha (Kumari et al, 2016), with nearly 60% of the bears being supplied from the area. The collection of bear cubs from the wild was largely demand driven, i.e. driven by the demand from bear dancing Kalandars.

ANALYSIS:

Geography of operation of the Kalandars:

The Kalandars led a semi-nomadic life and travelled across India with their bears. Some of these areas of operation and settlement included Delhi, Uttar Pradesh, Rajasthan, Haryana, Maharashtra, Madhya Pradesh, Odisha, Jharkhand, Bihar, West Bengal, Chhattisgarh, Karnataka, Andhra Pradesh (then unbifurcated), Kerala, Goa, Tamil Nadu and Uttarakhand (Seshamani & Satyanarayan, 1997).

Economics of dancing a bear:

To a Kalandar, a sloth bear cub would cost INR 3000-5000, a trained sub-adult INR 6000-8000, and an adult bear INR 15,000-25,000 (Seshamani & Satyanarayan, 1997). Even though a Kalandar would not have the ready cash to purchase the bear, they would borrow the money and incur heavy debts (*ibid*). Furthermore, the mortality rate of a sloth bear cub was high in the first three years and could easily mean more debt. Looking after the bear was

also capital heavy. To feed the bear, on an average a Kalandar would spend INR 20-30 per day for a cub and INR 75-110 for an adult bear per day (*ibid*).

The earnings from street performances would average around INR 2000-3000 per day during peak tourist season (Seshamani & Satyanarayan, 1997). During this time the Kalandars would perform at urban spaces. Post tourist season, the Kalandars moved to rural areas, where the average earnings reduced to INR 1000-1500 and they would receive grains, vegetables from the spectators (*ibid*). Overall, bear dancing was a financially difficult profession to sustain.

Consequence of the law:

With the amendments coming to the Wild Life (Protection) Act, 1972, in 1992 overnight the ownership of sloth bears became illegal (Radhakrishnan, 2007, Seshamani & Satyanarayan, 1997). Due to this change in law, the bear owning Kalandars started to face pressure from the law enforcement agencies, especially in the urban areas. Furthermore, from 1998, live animal shows were banned (Kumari et al, 2016). And to add to the financial quandary, unofficial transactions of about INR 3000 were made under the table to get a licence illegally renewed (Seshamani & Satyanarayan, 1997). Owing to the increased awareness about the law and loss in interest in the traditional profession there was a decline in the number of dancing bears from the 1990s to the 2000s (Kumari et al, 2016).

Socio-economic conditions of the Kalandar tribe:

The Government of India classified the Kalandar tribes as Other Backward Castes (Kumari et al, 2016, Seshamani & Satyanarayan, 1997). There was a mistrust in the system, as they had been pushed to the margins of the society due to their traditional livelihood, and the difficulties of getting absorbed into the mainstream

(*ibid*). There was little help from the government to improve their social and economic conditions despite the recognised economic status of the tribe (Seshamani & Satyanarayan, 1997).

They lived in a constant state of poverty due to limited income sources (Kumari et al, 2016, Seshamani & Satyanarayan, 1997). Moreover, their family size was large averaging at 10-19 members (*ibid*). They often lived in poor conditions, with no running water, irregular power supply and limited access to medical care. Their houses had to be rebuilt every monsoon due to the poor material used (Seshamani & Satyanarayan, 1997). Little importance was given to education and many children were also uneducated. Lacking other alternatives to income, the Kalandars were stuck in a perpetual cycle of poverty. The cost of maintaining a bear was also high. The Kalandars had become conscious of the fact that their traditional occupation was not economically viable anymore.

Source of bear cubs in Odisha:

It was found that around seven tribes were involved in sloth bear poaching in Odisha (Kumari et al, 2016). These tribes too were economically underprivileged and were often involved in hunting to supplement their earnings. Some tribes exclusively depended on forest resources to make ends meet. Sambalpur, Odisha was identified as an important trade centre for live bear trade (*ibid*).

In order to capture a bear cub, the tribals would smoke the dens. Often in the process the mother would get killed (Seshamani & Satyanarayan, 1997 & Kumari et al, 2016).

Role of the middleman in sloth bear sale:

The sloth bear trade in Sambalpur was controlled by a middleman, who purchased bears from the tribes in

exchange for paltry sum or alcohol or other favours (Kumari et al, 2016). The middleman was the point of contact for Kalandars. He made sure that the tribals and the Kalandars never came in contact with each other, and bear transactions were made away from the city centre.

RESPONSE

Reducing demand by providing alternative livelihoods to the Kalandars:

As the trade in sloth bears was demand-driven, it was critical to move the Kalandars to alternate livelihood opinions. The Kalandars themselves were willing to receive a helping hand. Several NGOs worked in different geographies to provide alternative livelihoods to the Kalandars. They provided seed funds and training to Kalandar men to start their new professions (Kumari et al, 2016, Seshamani & Satyanarayan, 1997). This included driving trucks or auto-rickshaws, opening small shops. Women were also taught skills such as tailoring to form self help groups, to supplement their incomes. Support was also provided to put children into school.

For the longevity of the intervention, the Kalandars were provided a helping hand by national NGOS in obtaining necessary government documents that could then give them access to various government schemes (Kumari et al, 2016). Some were hired as keepers for the surrendered dancing bears at long-term care facilities.

Removing key links of the trade:

While the government eventually arrested the middleman of sloth bear cubs trade, to prevent replacement, the NGOs extended alternate livelihood programs to the family members of the middleman. This was done to ensure that they do not fall back into the trade for livelihood.



To support the economic well-being of the Kalandars, NGOs run training centers for women. © Gargi Sharma / WCS-India

Introducing community stewardship at source site:

Village Protection Committees were formed in Sambalpur district at three villages (Kumari et al, 2016). The committee consisted of forest dwellers, whose main job was to protect the dens of sloth bears during the birthing season. They would conduct regular patrols in the den areas. Some of these members were former hunters.

Parallely several community outreach activities were conducted in Redhakhol town (Kumari et al, 2016). These included street plays, school activities, amongst others. As the sloth bear appears in the

religious texts of Ramayana, scenes from the Holy book were depicted with the subtle messaging to not support the trade (Kumari et al, 2016). However, our respondents shared that this strategy did not work in tribal hamlets which were the source of bear collection.

Increasing vigilance at source site :

Special training was provided to the Forest Department and Police officials at Sambalpur district to familiarise them with signs of poaching, seasons of poaching, key trade hubs and filing lawsuits (Kumari et al, 2016). This was done to increase their confidence in tackling the illegal trade in sloth bear cubs.

ASSESS

Persistence of the dancing bear practice:

Once a common sight in India, dancing bears have vanished from almost all urban centres and towns. This was especially true for the states of Delhi, Haryana, Rajasthan, Chhattisgarh and West Bengal which were believed to be strongholds of the profession. However, between February, 2010 to April, 2010 at least 28 instances of bear dancing in seven states were reported from remote locations that are politically unstable or fall close to porous borders or have low enforcement vigilance (D’Cruze et al, 2011).

Displacement:

Even though livelihood options were provided to the Kalandars, some continue to be dependent on animal exploitative entertainment for livelihood. The choice of animal for them now is the Rhesus macaque (Kumari et al, 2016, Radhakrishnan, 2007), which is also protected under the law but does not face big conservation challenges in India. There is criticism from researchers (Radhakrishnan, 2007) that alternative livelihood programs started by various NGOs did not fulfil their original goals and many Kalandars continue to live in poverty.

Source of sloth bears:

As of 2012, conservationists believe that instances of sloth bear poaching from Sambalpur had reduced drastically.



A great hornbill male feeding the female nesting inside the cavity. One of the respondents said that the act of watching the hornbills bringing up a chick was truly transforming to most people in Seijosa.

© Rohit Naniwadekar / Wikimedia Commons

CHAPTER 3:

REDUCING POACHING OF HORNIBILLS IN SEIJOSA, ARUNACHAL PRADESH

Hornbills nest in tree hollows, with each nesting season lasting for around four months and producing one chick. The female remains sealed inside the nest for about three weeks with the chick before it is ready to fledge, and during this time both mother and chick depend on the male for food. This biology of the bird makes it especially vulnerable to hunting pressures and lack of nesting trees. These

large birds need uninterrupted expanses of evergreen and mixed deciduous forest to nest and feed. Unfortunately, hornbills face threat of habitat loss and hunting for their body parts for cultural and medicinal use (Stolton, Timmins & Dudley, 2022). The loss of these birds in the forest can affect the long term composition of the forest they live in as they play a vital role in dispersing large seeds in the forest.

SCAN:

The East Kameng District of Arunachal Pradesh, home to the Pakke Wildlife Sanctuary, harbors four species of hornbills -- i.e. great hornbill (*Buceros bicornis*), wreathed hornbill (*Rhyticeros undulatus*), rufous-necked hornbill (*Aceros nipalensis*), and oriental pied hornbill (*Anthracoceros albirostris*) (Naniwadekar et al, 2020). Hunting was identified as one of the most critical threats to the survival of hornbills in the region (Datta & Naniwadekar, 2015). Out of the four hornbill species, the beaks of great hornbill, wreathed hornbill and rufous-necked hornbill were utilized to make the traditional headgear, *Byopa*, worn by men of the Nyishi tribe. The hunting pressure outside the wildlife sanctuary was particularly high due to lack of jurisdiction of the enforcement agency. The threat was multiplied by the pressure of habitat loss due to logging.

ANALYSIS:

The cultural significance of hornbills:

Byopa forms a significant part of the traditional attire of the Nyshis. The headgear is worn during important ceremonies observed by the tribe such as the Nyokum festival (Datta & Naniwadekar, 2015), and is a sign of valor and manhood (Pangging et al, 2019).

Decision making power within the tribe:

Gaon burrahs (village elders), traditional village chiefs, are very powerful individuals in tribal communities. They are often the gatekeepers of activities within a particular village, in the sense that they control access to common natural resources and their approval is crucial to implement state sponsored programmes (Mishra, 2018). They are also incharge of customary laws and other socio-cultural activities. Politics in Arunachal Pradesh is heavily embedded in ethnic patronage and competition.

Hornbill nesting outside the protected area:

While hunting bans were strictly enforced inside the wildlife sanctuary as per the Wild Life (Protection) Act, 1972, the biggest threat to hornbills populations came in the buffer area and reserved forest, where the jurisdiction of the Forest Department was not much (Rane & Datta, 2015). Here the hornbills were routinely killed for their parts and meat.

RESPONSE:

Change of product:

Between 2003-04, the Arunachal Forest Department in collaboration with a national NGO (Stolton, Timmins, Dudley, 2022) introduced fiberglass replicas of the *Byopa* to distribute amongst the members of the tribe. Local artisans were also trained in making the *Byopa* so that it can become a commercially viable activity (Hindustan Times, 2004).

The artificial *Byopa* was conceived in such a way that it not only mimicked the original product, but had better qualities as well. The fiberglass *Byopa* could be developed without much effort as opposed to the original product that required illegal hunting of the bird. One of the biggest factors that led to the acceptance of the artificial *Byopa* was its durability. Unlike the traditional *Byopa*, it could be easily glazed and did not rot (causing a foul odor) during monsoon months.

Stewardship for hornbills:

In order to address the hunting that was happening outside the protected area, it was critical to get *gaon burrahs* on-board to initiate any conservation activities. An important factor that worked in favor of the intervention was that the Divisional Forest Officer (DFO) of the Forest



Byopa worn by Nyishi men symbolises manhood and valour. Traditionally the hornbill casque and feather are used to make it. © Rohit Naniwadekar / Wikimedia Commons

Department in East Kameng district, also belonged to the Nyishi tribe (Stolton, Timmins, Dudley, 2022). The officer was able to get access to the *gaon burrahs* and start conversations about hornbill conservation and eventually get them and the villages on board to switch to fiberglass headgears. It is important to note here that it had been a slow process as there was resistance from the community to give up hunting.

With change in leadership, the succeeding DFO too belonged to the Nysihi tribe. They continued engaging with the villages, and, with the help of another NGO and the Ghora Abbe Society, were able to introduce a shared parenting program in 2011 for hornbills, called the Hornbill Nest Adoption Program (HNAP) (Nature Conservation Foundation, n.d.).

The purpose of the project was to protect the hornbill nests outside the Pakke Tiger Reserve, where they faced anthropogenic pressures. To ensure maximum support for the intervention, the initial nest protectors employed were the elderly of the village, who held considerable command and respect in the village. Eventually more youth were hired as nest protectors.

As of 2021, ten villages have participated in the program and there are 11 nest protectors, members of the local community, who find, monitor and protect nests of the four hornbill species. This intervention has further created a sense of guardianship for the hornbills. These nest protectors also participate in other monitoring activities inside the reserve forest.

Since 2006, around 140 Nyishi youths were also employed in the Forest Department and were involved in the protection of the adjoining Pakke Tiger Reserve (Datta & Naniwadekar, 2015). This further helped in creating a sense of ownership and responsibility towards the protected area and generated awareness about wildlife protection laws.

In 2015, the Pakke Paga Festival of East Kameng district and the only conservation festival of the state was declared as the state festival of Arunachal Pradesh (Nature Conservation Foundation, n.d.). The aim of the festival was to highlight and celebrate the conservation story of the Nyishis, and increase awareness about the conservation of hornbills. This also brought in a lot of tourists and conservationists to the region, who spread the word and thus helped in inculcating a sense of pride for the hornbill.

Increased enforcement:

A local NGO, Ghora Aabhe was set up by the DFO (Stolton, Timmins & Dudley, 2022), comprising *gaon burrah* from nine villages on the fringes of the Pakke Tiger Reserve, to reflect the traditional functioning of the Nyishi tribe. This society adopted stringent norms and imposed heavy penalties on hunting of hornbills (Velho, 2010, Hindustan Times, 2004). By 2006, 16 villages had passed such resolutions against hunting (Stolton, Timmins & Dudley, 2022), socially disincentivizing hunting of hornbills.

Economic incentives:

Conservation of hornbills brought several economic incentives to the surrounding villages. Firstly, many Nyishi youth were employed and put on payroll of the Forest Department; secondly, with the HNAP, several villagers were employed as nest protectors; and lastly, the annual Pakke Paga Festival brought tourism to the area.

With the support of the Forest

Department and NGOs, the villagers were also able to set up home-stays for bird watching tours. This brought additional income to the people, who saw tangible benefits to conserving hornbills.

ASSESS:

Acceptance of the hornbill casques:

A study by Kumar and Riba (2015) found that since the introduction of the artificial beaks, 60% of the Nyishi respondents preferred headgear decorated by artificial beaks either made of fiberglass or wood and only 30% still preferred the original beaks.

Hornbill nests adopted:

Up till 2022, overall 40 hornbill nests have been protected and 193 chicks have fledged (Dutta & Pradhan, 2022).

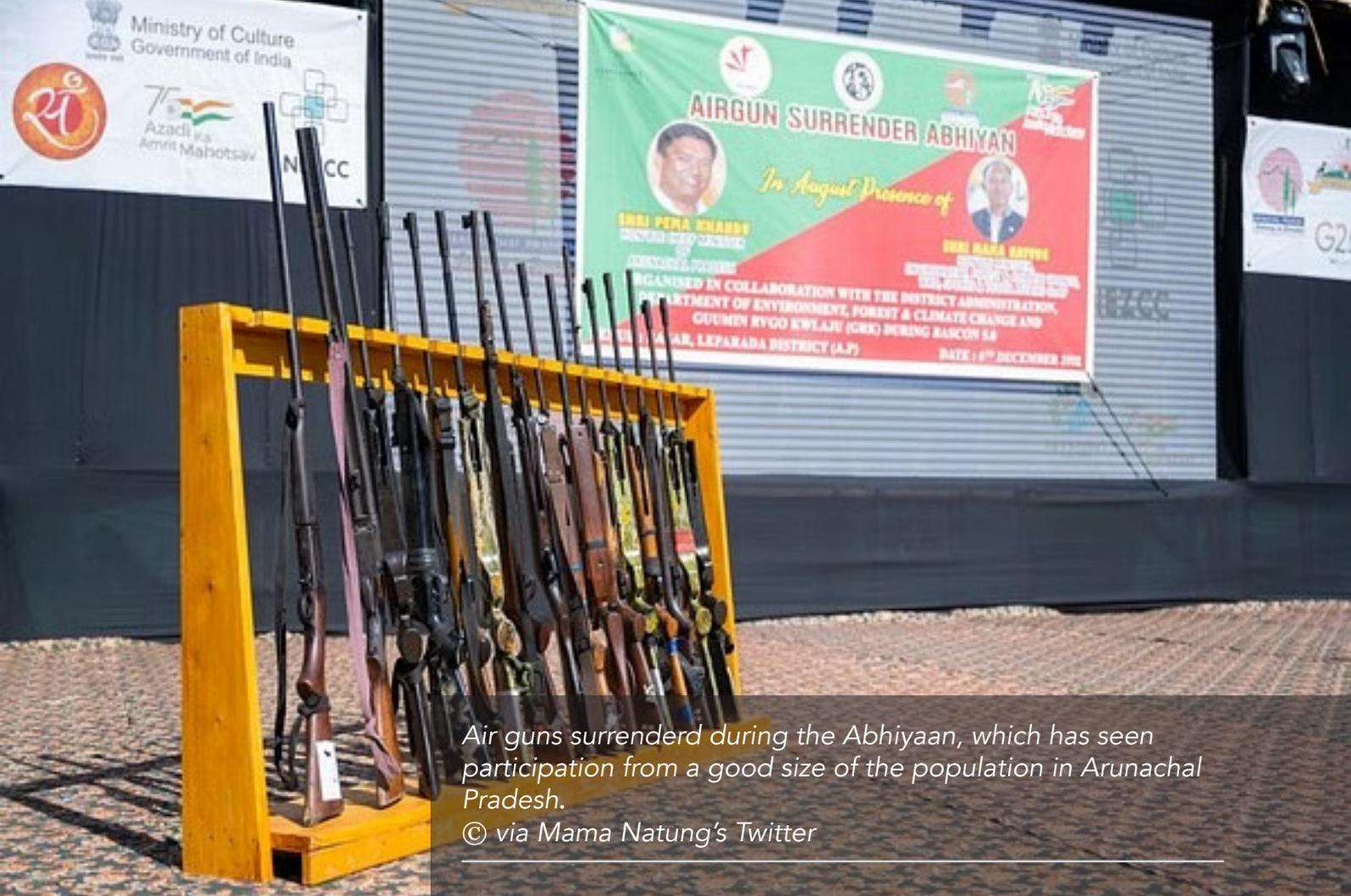
CHALLENGES:

Personality driven interventions

Much of the success of the intervention was hinged on the personality of the DFO, who spearheaded the interventions and had a big role to play towards community buy-in. Our respondents noted that ever since his transfer from the post, there have been changes in attitudes towards conservation.

Pressure from illegal logging

While the interventions were successful in terms of their adoption and acceptance by the people, the biggest threat to the survival of hornbills is the loss of habitat, ie, logging continues. Conservation concerns for the hornbill continue, although the pressure from illegal hunting has reduced due to the interventions mentioned above.



Air guns surrendered during the Abhiyaan, which has seen participation from a good size of the population in Arunachal Pradesh.

© via Mama Natung's Twitter

CHAPTER 4:

SURRENDERING AIR GUNS TO MAKE WAY FOR WILDLIFE IN ARUNACHAL PRADESH

The state of Arunachal Pradesh in northeast India falls in the Indo-Myanmar biodiversity hotspot, which is one of 36 such hotspots recognized across the world (Myers et al., 2000). New species of birds, amphibians, and even primates are still being discovered from remote parts of this region, indicating its richness in species diversity (Mishra & Dutta, 2007). Over 700

bird species have been recorded from this state and some of these, including the recently discovered and highly endangered Bugun liocichla (*Liocichla bugunorum*) (Athreya, 2006) are endemic to the state. One survey reported that at least 33 species of mammals, 27 species of birds and 2 reptiles were being hunted in parts of the state (Aiyadurai, 2007).

SCAN:

The Airgun Surrender Abhiyaan was initiated by the Government of Arunachal Pradesh in the light of unprecedented hunting of birds in the state using air guns. Although banned under the law, hunting is intricately linked in the culture of the tribes in Arunachal Pradesh. Previous studies (Aiyadurai, Singh and Millner-Gulland, 2010), have shown that hunting in the state is driven by self consumption and ritualistic practices of the residing tribes who practice animistic faith. In this study (Aiyadurai et al, 2010) it was also recorded that tribes now have to go further into the forest to hunt, indicating decline in species populations. With the easy access to modern equipment, hunting has become an increasingly popular recreational activity and its effects on wildlife are becoming a growing concern (Mendiratta, 2022). Specifically in the case of air guns, as no license is required for purchase, it has gained immense popularity as a common tool for hunting birds and small mammals.

ANALYSIS:

Modus operandi of purchase of air guns:

Air guns, as opposed to firearms, do not require a license from the Government to be purchased. As such they are unregistered, which makes monitoring numbers and ownership extremely challenging (Pundir, 2021). This also makes them the preferred equipment for hunting. There are broadly two ways to acquire air guns:

1. Air guns, including those fitted with scopes, are readily available online, as there is no regulation towards their purchase. These guns are also relatively inexpensive. The pellets are also easily and available, inexpensive, cheap and the sale is unregulated (Mendiratta, 2022).

2. Elder men in the family, who often do not hunt anymore, also lend out their air guns to younger relatives, often with the agreement that the hunt be shared.

Motivations for owning airguns:

Owning airguns was a matter of pride for the men, as hunting is predominantly a male activity (Aiyadurai, Singh and Millner-Gulland, 2010). Tied to this fact was that if you were a good hunter, you garnered more respect. It was important to tap into this sense of pride and replace the pride in owning airguns with conservation values.

Scale of hunting using air guns:

Furthermore, almost any middle-class household in Arunachal Pradesh would be in the possession of one or two air guns. If there was a young male member in the family, then the likelihood of the gun being used was high. One respondent estimated that using one air gun, a person could hunt 20-25 birds during one trip. This was in huge contrast to traditional methods of hunting where one successful hunting trip might yield approximately five-six birds.

Groundwork of conservation organizations:

Several community based organizations and non-governmental organizations had already been working in their districts to spread the message of conservation. They had been regularly hosting awareness programs, nature walks and involving the youth of the district in their efforts. Due to the sensitization work done by these organizations, they acted as facilitators and collaborators for the implementation of the intervention.

RESPONSE:

Honoring voluntary surrender of air guns:

The Government of Arunachal Pradesh, rolled out a scheme for people to come forward and voluntarily surrender their air guns to make way for the wildlife of the state. Honing on the pride sentiment of the Arunachali people, those who surrendered their guns were honored through a certificate of recognition. Events were organized at the district level for gun surrender that were celebrated in grand fashion with the presence of highest officials, and media limelight was given to these events. This created a feeling of pride amongst the people for they and their districts had taken steps to conserve wildlife. Furthermore, it helped that the Government of Arunachal Pradesh was recognised by the Government of India for their unique initiative that saw mass participation from the people. The Prime Minister of India also lauded the Air Gun Surrender Abhiyaan on a highly publicized radio show ('Maan ki baat') (MyGov, 2022). Moreover, in 2021, the Forest Department of Arunachal Pradesh received a 'Conservation Award' for the surrender program. There have also been talks about creating a museum with the surrendered guns with names of the people who surrendered the guns.

Gap in understanding of ecological processes:

There was a perception that the resources in the forest were infinite, and that even regular hunting would not diminish species populations. There also seemed to be a gap in people's understanding of the importance of intact and diverse ecosystems and the dependency of humans on the services provided by such ecosystems. The decline in bird populations, especially insectivores, coupled with climate change, are being perceived to cause a decline in agricultural yields and forest health.

Generating conservation awareness:

A critical element to the surrendering process was the awareness programs

that were being held in-conjunction with the surrender program. Local non-governmental organizations, community based organizations and student associations, with the help of the Forest Department, were doing the groundwork of raising awareness about the importance of healthy ecosystems. They were highlighting the various linkages between humans and nature, and the interdependency of the two.

ASSESS:

While the scheme is still at its nascent stage, having been rolled out in 2021, there have been a few successes. Till December, 2022, around 2,400 air guns had been surrendered (ANI, 2022) Furthermore, people came forward to surrender their licensed guns as well. In fact, Jungpam village has been declared as the first air gun free village of Arunachal Pradesh (MyGov, 2022).

The long-term impact of the scheme is still unknown, and yet to be studied.

CHALLENGES:

One of the key challenges of the intervention is that no monetary compensation is being offered for the surrender of air guns, many of which are expensive purchases. It remains to be seen if the government will come up with a compensation scheme.

Another major challenge remains that the purchase of the air guns has not been regulated except for the West Siang District via order by District Magistrate (2019), where they insisted that a license be obtained for air guns. A strong possibility exists that people can repurchase new airguns and go back to hunting.

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