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NALSAR University of Law, Hyderabad**

Course Material

M.A. (Animal Protection Laws)

1.2.6. Wildlife Laws

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1. Balancing Interests (Humans & Animals)

- Human-Wildlife Conflict

S r n o.	Author	Paper	Summary	Purpose	Pgs
1.	Ramesh Kannan*, Charlie M. Shackleton and R. Uma Shaanker CURRENT SCIENCE, VOL. 104, NO. 9, 10 MAY 2013	Playing with the forest: invasive alien plants, policy and protected areas in India	Protected areas (PAs) are inviolate and invaluable landscapes that promote the in situ conservation of endangered, threatened and rare species. Accordingly, and in keeping with this definition, PA managers ensure that PAs are free from fire, poaching, grazing, non-timber forest products collection, mining, etc. In India, following the Indian Wildlife (Protection) Act (1972), there are today 102 and 515 National Parks and Wildlife Sanctuaries respectively. Many of these have in recent decades been heavily threatened by the spread of invasive alien plant species, notable among them being Lantana and Eupatorium.	These species may have usurped as yet unestimated number of native plants and fauna, besides depressing the reproduction of native plant species. In fact, it is realized that the threat to biodiversity by invasive alien species (IAS) may only be second to that of fragmentation. Yet there seems to be no major attempts to eradicate, contain or manage IAS in PAs. Ironically, the justification for the lack of action lies in the definition of PAs – that they need to be kept inviolate and therefore above any active intervention. In this article we bring home this serious contradiction in the approach to management of PAs in India and discuss the philosophical origins of this practice. We argue that if we are to protect our PAs from the serious scourge of invasive species, we would have to relook at the policy governing PA management and revise it to be more inclusive than exclusive.	7
2.	WCS India (2021)	Mammal and bird species ranges overlap with armed conflicts and associated conservation threats	Human disturbances, including “war, civil unrest and military exercises” (all species: 1.4%) and agricultural activities (threatened species: 6.2%), were also more prominent among the conflict-overlapping suite of mammals.	Understanding wildlife in context of armed conflict and human rights law	8

- Right to Forests (Forest Rights Act, 2006)

Sr no .	Authors	Name	Summary	Purpose	Pgs
1.	Legal Brief II Centre for Environmental Law (CEL), at WWF – India (2016)	NEW STATE VILLAGE FOREST RULES	Are Madhya Pradesh and Maharashtra redefining participatory forest management in India? The National Forest Policy, 1988, followed by the introduction of Joint Forest Management ('JFM') in 1990, sought to introduce a departure from the centralized approach of the Indian state to forest management to a more participatory one.	Following the adoption of the central JFM Resolution by states in the 1990s and into the first decade of this century, the adoption of the Panchayats (Extension to Scheduled Areas) Act, 1996 and the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act ('FRA') in 2006, the policy and legal framework for recognition of rights of the forest-dwelling and forest-dependent communities seemed to have been put in place.	14
2.	Rizwan Mithawala Sanctuary Asia (2019)	Averting Extinction – One Blood Sample at a Time	Livestock is a reflection of the wild	Legal capacity building and implementation: Forensic and wildlife	5
3	Ajit Menon Law, Land Use and the Environment, Afro-Indian Dialogues, Pondichéry, Institut Français de Pondichéry, 2007, 549 p (363-387)	Situating Law: Adivasi Rights and the Political Economy of Environment and Development in India	The recent controversial debates and eventual passing of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006 (hereafter the STB), which was originally aimed at providing adivasi people rights to forest land already occupied by them and access to forest produce for livelihood purposes, not only highlights the struggles that surround the passing of protective social legislation but, equally importantly, the vagaries of law as a possible instrument through which meaningful social change (that recognizes adivasi 'customary' claims to land) can be initiated.	The arguments put forward are largely based on a re-reading of existing laws and legal decisions as well as on analyses of environmental law that address social rights in particular, with a view to opening up a more broad-based dialogue between legal scholars and social scientists pertaining to the socio-economic and political dimensions of law.	13

4.	Bahar Dutt	BIODIVERSITY LIVELIHOODS & THE LAW	The report brings into sharp focus the issue of livelihood of traditional communities whose claim to their profession and socio-cultural compulsions were ignored when the law was framed. The report can be a catalyst for action for researchers, wildlife administrators and policy makers.	For the long term conservation of natural resources and forests and in this case the snakes (who play a unique role in ensuring food security in the ecosystem), it is necessary that a framework for participatory conservation strategy is evolved. Key policy recommendations from an in-depth study of the case of the 'Jogi-Nath' snake charmers of India	15

2. Domestic Wildlife Protection Laws

- The Wildlife (Protection) Act, 1972; Wildlife (Protection) Rules, 1995, National Board for Wildlife

Sr no.	Authors	Name	Summary	Purpose	Pgs
1	Debadityo Sinha and Mridhu Tandon (Vidhi Centre for Legal Policy)	Safeguarding Wildlife Beyond Protected Areas In India: A Review Of Laws, Policies And Other Conservation Tools	The article discusses the different forms of wildlife habitats and conservation areas found outside the PAs and how the existing laws and government actions lack in vigor and pose hurdles in effectively protecting forests and wildlife.	India, a country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals. Wildlife in India is protected through protections granted to species as well as declaring an area as Protected Area (PA) under the Wildlife (Protection) Act, 1972 such as Wildlife Sanctuaries and National Parks.	32
2.	Mridhu Tandon and Dr Rakesh Singh (LIFE Policy Papers)	Analysis of Wildlife Clearances 2019 July 2020 Vol II No. 2	Wildlife clearances granted by the Standing Committee of the National Board for Wildlife under the provisions of Wildlife (Protection) Act, 1972	To better understand the extent of diversion within Protected Areas as well as areas where such diversions have taken place. Lawyers, conservationists, wildlife managers, decision makers and media to have a comprehensive overview of threats to the Protected Area network in the country.	35

- Biological Diversity Act, 2002; National Biodiversity Authority

Sr no.	Authors	Name	Summary	Purpose	Pg

1.	Kannan, R., C. Shkelton, R. Umashanker ATREE Current Science 104 (9): 1159-1165.	Playing with the forest: invasive alien plants, policy and protected areas in India	It is realized that the threat to biodiversity by invasive alien species (IAS) may only be second to that of fragmentation.	The paper argues that if we are to protect our PAs from the serious scourge of invasive species, we would have to relook at the policy governing PA management and revise it to be more inclusive than exclusive.	7
2.	Madhav Gadgil (Journal of Bio sciences)	India's Biological diversity Act, 2002: An Act for the new millennium	Understanding the The Biological Diversity Act 2002, which is a part of the Indian attempt to make some progress and to operationalize the two important provisions of the Convention on Biological Diversity.	Aims of this ambitious act to promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources, including habitats, cultivars, domesticated stocks and breeds of animals and micro-organisms.	3
3.	Krishnamoorthy Venkataraman, Zoological Survey of India (Asian Biotechnology and Development Review)	Access and Benefit sharing and the Biological Diversity Act of India: A progress report	Since the BD Act is in force in India, the application for Access for Bioresources and associated Traditional Knowledge (for research and/or commercial use), Transfer of Research Results (Technology), approval for Patent (IPR) applications and Third Party Transfer of Bioresources were received regularly and approved by the National Biodiversity Authority in accordance with the BD Act.	The nitty-gritty of the process of the approval of application for access of bioresources, the criteria for benefit sharing and the recent developments in the National Biodiversity Authority in connection with access and benefit sharing are shared in this paper for transparency in the ABS process.	12
4.	Gitanjali Nain Gill, Nupur Chowdhary, Nidhi Srivastava	Biodiversity and the Indian Judiciary: Tracing the Trajectory	The article analyses the judicial space that makes, interprets and enforces laws that conserve and support the sustainable use of biodiversity. The article follows the chronological path of biodiversity litigation i.e. pre 1992-2002; then 2002- 2010 and finally 2010-2020 and	The Covid-19 narrative spotlights the necessity to conserve biological diversity (biodiversity) including ecosystems and wildlife. Biodiversity problems are global, and associated governance issues range beyond geographical and spatial boundaries. The globalisation and internationalisation of biodiversity concerns have	53

			examines significant aspects of the three decades of biodiversity litigation.	resulted in the emergence of biodiversity legal frameworks designed to conserve and sustainably use our planet's biological resources. As an 'organic and evolving discipline', biodiversity laws are increasingly important and affect the Earth's natural systems that support human life.	

- Conservation policies

Sr no.	Author	Paper	Summary	Purpose	Pgs
1.	Alyna Bharat and G. Poyyamoli (Zoos Print Journal)	Captive Breeding and Zoo Policy in India: Lessons from Arignar Anna Zoological Park	There are lacunae in the areas of prioritization of Indian taxa for conservation breeding and in the formulation of zoo policy. This has consequently restricted, in many ways, the extent of zoo contribution to the conservation cause. Recommendations have been suggested based on the results that can improve the potential of the zoo to perform its multifaceted role.	The objectives of the study conducted at the Arignar Anna Zoological Park, Chennai, Tamil Nadu, were to assess the success of captive breeding of chosen mammalian species and to evaluate the potential of the zoo for ex situ conservation. Results obtained showed that the potential of the zoo to conserve those species threatened in the wild, is enormous.	8
2.	Akhileshwari Reddy, Anubhav Vanamalai, Shriyam Gupta, Dr Krithi Karanth (Vidhi Centre for Legal Policy co-authored with the Centre for Wildlife Studies) (2019)	Human-Wildlife Conflict in Karnataka: The need for a Human-Wildlife Conflict Compensation Law	An analysis of the current system of compensation, and a proposed law to bridge gaps. A Report that focuses on the need for a comprehensive Human Wildlife Conflict Compensation Law in Karnataka to increase transparency, efficiency and protect wildlife from retaliatory attacks for damages caused by them.	Highlights no uniform national compensation policy in India and other lacunae and proposes a comprehensive legal framework – a Karnataka Human Wildlife Conflict Compensation Law – for the disbursement of compensation. The proposed law aims to increase the transparency of the compensation process in the state, and foster co-existence between [Karnataka's] wildlife and people.	45

3	Lianne D'Souza, Jayanti Jaya (CEERA, NLSIU)	Coastal Regulation Zone Management and The Grant of Post Facto Clearances: The Case of Vanashakti & Anr. V. UOI & Ors.	route. While the move of the government is laudable to an extent for attempting to give possible violators a window of opportunity in regularising their activities, on the contrary, the Notification also paints a picture of legal condonation. It Recognizing the drastic consequences of such a move, the Bombay High Court has offered some respite in this regard by delving into the legal validity of the impugned notification in the case of Vanashakti & Anr. v Union of India & Ors.[3]	The Coastal Regulation Zone ("CRZ") Notification, together with successive amendments, has been hailed as a progressive law that espouses coastal protection measures and guards against unregulated development. However, over the past few years, the regulatory structure under the Notification has faced certain constraints, leading to the dilution of its rigour.	3

- Wildlife Corridors

S r n o.	Author	Paper	Summary	Purpose	Pgs
1.	Shyama Kuriakose (Vidhi Centre for Legal Policy)	Supreme Court on Wildlife Conservation: Kaziranga-Karbi Anglong Landscape	Judgments on the conservation of the Kaziranga-Karbi Anglong Landscape in Assam.	Consistent usage of environment principles in wildlife conservation	29
2.	Raghav Srivastava and Richa Tyagi (WWF-India) Environmental Law Review 2016, Vol. 18(3) 205–223	Wildlife corridors in india: Viable legal tools for species conservation?	Wildlife corridors, used by various species to migrate, breed and feed, are increasingly becoming relevant as essential tools for wildlife conservation. Rapid increase in industrial and infrastructural development, especially around forests, has resulted in widespread habitat fragmentation and isolation. Added to this, the growing development (for tourism, linear infrastructure etc.) around protected areas, and the altered de facto boundaries of these, have exacerbated this need. There is, however, no 'hard' statutory	This paper seeks to analyze the various barriers to corridor conservation and management, and whether the existing legal measures are underutilized in providing legal protection to wildlife corridors, without the need of a parallel institutional framework. Through an understanding of the criticality of corridors to wildlife conservation, the adequacy of existing legal structures has been	19

			recognition afforded in India to wildlife corridors in spite of their established relevance in ecological conservation. Nor is there a strict prohibition on development within, and around important corridors in India. Even so, wildlife corridors have found passing mention in certain conservation law and guidelines framed thereunder, which seek to protect wildlife habitat and reduce human – wildlife conflict. These extant legal spaces have largely proved ineffective in the protection and conservation of corridors, and corridor protection and management continues to be a dormant legal space in India.	examined by the authors, and recommendations made for augmenting the current legal framework with more concrete strategies.	
3	Legal Brief I, Centre for Environmental Law (CEL), at WWF – India (2016)	Legal Spaces For Wildlife Corridors	Wildlife corridors in India are under severe threat from social and economic demands. Growing pressure from linear infrastructure, irrigation, mining, and human habitats, have pushed most natural spaces into islands and fragmented corridor spaces between source areas. A primary concern for corridor management is the growing linear infrastructure network in the country, particularly in light of the recent push to ease the environmental clearance process.	Exploring legal spaces for corridor protection as ESZs, Community Reserves, Conservation Reserves, Community Forest Resources, and Biodiversity Heritage Sites.	14

3. Wildlife Trade:

S r n o .	Authors	Name	Summary	Purpose	
1	Mridula Vijairaghavan, Sahila Kudalkar WCS-India	The Illustrated Wildlife Trade Investigation Guide	Agencies Involved In Tackling Wildlife Crime, Supporting Legislations To Tackle Wildlife Crime, Detection & Investigation, Wildlife Offence Report (WLOR) & Judicial Custody, Investigation Post Wlor, Complaints, Prosecution, Post Trial Action, Common Offences In	Completely-pictorial, non-textual guide for lawyers to understand wildlife trade in India and how-to guide for supporting law enforcement.	9

			Wildlife Trade.		
2	Cara Tejpal First published in Sanctuary Asia, Vol.35 No. 12, December 2015	Chasing Chacha: How India's most notorious tiger-parts trader since Sansar Chand was caught	Wielding The Law - A brief interview with Special Counsel Kartik Shukul (also refer to Samir Sinha's The Wildlife Crime Nexus First published in Sanctuary Asia, Vol. 33 No. 6, June 2013)	Context on wildlife crime in Indian courtrooms.	6
3	Madhubanti Sadhya, Milind Rajratnam (CEERA, NLSIU)	Illicit Wildlife Trade: Adding fuel to the Pandemic Fire	This blog post elaborates on the linkage between the spread of zoonoses and wildlife trade, and analyzes the international response to illicit wildlife trade and the existing legal framework in India concerning it.	The ongoing pandemic has highlighted a number of other zoonoses that have posed a significant threat to human health in the past few decades. Many of these diseases strongly indicate the correlation between disease transmission and wildlife trade, as in most of them the poorly regulated and unsanitary wildlife markets have provided a suitable environment for the growth and transmission of these diseases among other species.	3

4. Prosecuting Wildlife Crimes:

Sr no.	Authors	Name	Summary	Purpose	Pgs
1.	Wildlife Crime Control Bureau	Wildlife Crime Investigation Manual	Excerpts from A Hand book for Wildlife Crime Investigation Officers	Flow Chart on Wildlife Crime Investigation Process; Important Cases	10
2.	Kiran Rahalkar BNHS' Hornbill magazine, January-March 2019	Wildlife Crime: Prosecution Hurdles	Effective law enforcement is a tool for conservation, but often it is not viewed in that light. If we intend to change this, we need to tackle various aspects of wildlife crime across the spectrum.	The Wild Life (Protection) Act, 1972 is one of the most comprehensively drafted acts, which lays a lot of stress on protection of wildlife and prevention of crimes in the first place. But despite all this, the conviction rate in wildlife crimes is terribly low. With such dismal conviction rates, there is little fear of the law in the minds of perpetrators of wildlife crime, encouraging them to commit more such crimes.	3

Playing with the forest: invasive alien plants, policy and protected areas in India

Ramesh Kannan*, Charlie M. Shackleton and R. Uma Shaanker

Protected areas (PAs) are inviolate and invaluable landscapes that promote the in situ conservation of endangered, threatened and rare species. Accordingly, and in keeping with this definition, PA managers ensure that PAs are free from fire, poaching, grazing, non-timber forest products collection, mining, etc. In India, following the Indian Wildlife (Protection) Act (1972), there are today 102 and 515 National Parks and Wildlife Sanctuaries respectively. Many of these have in recent decades been heavily threatened by the spread of invasive alien plant species, notable among them being Lantana and Eupatorium. These species may have usurped as yet unestimated number of native plants and fauna, besides depressing the reproduction of native plant species. In fact, it is realized that the threat to biodiversity by invasive alien species (IAS) may only be second to that of fragmentation. Yet there seems to be no major attempts to eradicate, contain or manage IAS in PAs. Ironically, the justification for the lack of action lies in the definition of PAs – that they need to be kept inviolate and therefore above any active intervention. In this article we bring home this serious contradiction in the approach to management of PAs in India and discuss the philosophical origins of this practice. We argue that if we are to protect our PAs from the serious scourge of invasive species, we would have to relook at the policy governing PA management and revise it to be more inclusive than exclusive.

Keywords: Forest policies, invasive alien species, protected area network.

COLONIZATION of Africa and Asia by the European powers between the 15th and 19th centuries led to a quantum jump in the introduction of alien species into the colonized territories for food, fodder, energy and ornamental purposes^{1,2}. The Indian subcontinent was one such region in which colonial invasions brought in a number of invasive alien species (IAS) that greatly transformed the native landscapes. For a major part the introductions and subsequent naturalization of plant species native to other countries into India were guided by the colonial government policies³. However, over the years, many of these introductions went on to become IAS. For example, Sankaran *et al.*⁴ listed *Chromolaena odorata*, *Lantana camara*, *Mikania micrantha* and *Mimosa diplotricha* as the major IAS in India. In the recent past, *Prosopis juliflora* was introduced as an alternative fuelwood tree in southern India. *Lantana* was introduced into India at the

East India Botanical Gardens, Calcutta in 1807 as an ornamental plant by the British³. Since then, *Lantana* has spread to most parts of the country, in farmlands and forestlands, and has posed a formidable challenge to farmers and foresters alike. Conventional management efforts to control *Lantana* have not been successful. To date there is no robust management or monitoring mechanism against IAS in India. Large numbers of forest-dependent communities still depend on forest resources and their livelihood is at stake due to pervasive landscape alteration by major IAS in different parts of India. Against this background, it is important to review the existing policies and their implications on IAS management in India with special reference to protected areas (PAs).

We reviewed the Indian Forest Policy documents such as the National Forest Commission Report, Indian Forest Act, Wildlife Protection Act, etc. to understand the policy implications over the last half a century towards management of IAS. We also interviewed 73 retired forest officials who worked across the Western Ghats in Tamil Nadu, Kerala, Karnataka, Maharashtra and Goa and also reviewed the management practices of major IAS to identify their contribution in IAS management.

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Table 1. Number and extent of designated protected areas in India

Type	Status	Number	Area (km ²)
National Parks	Declared	102	36,579
Wildlife Sanctuaries	Declared	515	119,929
Conservation Reserve	Declared	47	1,382
Community Reserve	Declared	4	20

Source: Protected Area Network (MoEF); <http://envfor.nic.in/downloads/public-information/protected-area-network.pdf>

The protected area network in India

In 1970, the Indian Wildlife Board drafted the National Wildlife Policy which highlighted the major threats to wildlife species and habitats in the country, such as hunting, poaching, habitat alteration or destruction, forest fire, introduction of exotic species and commercial exploitation of forest resources⁵. This catalysed the enactment of the Wildlife (Protection) Act in 1972, which emphasized the need for creating PAs devoid of anthropogenic pressures such as livestock grazing, anthropogenic fires, land holdings and so on. This act classified the protection status into three categories, namely National Parks, Wildlife Sanctuaries and Closed Areas. Prior to 1972 there were only five National Parks and 64 Wildlife Sanctuaries in India, but within the next three decades these numbers increased almost ten times to 102 National Parks and 515 Wildlife Sanctuaries (Table 1).

Protected areas as undisturbed land

In India, as well as internationally, the guiding philosophy in declaring PAs is that they are parcels of land in which human disturbance is minimal or absent, so as to promote *in situ* conservation of representative or essential ecosystem services and processes, or habitats and species, with a special emphasis on endangered, threatened and rare species. Thus, they are expected to be largely devoid of anthropogenic pressures such as land clearing, agriculture, logging, hunting, human-induced fires and grazing by livestock⁶. In India, this objective is supported by a number of policies and management plans which restrict or deny most anthropogenic impacts in PAs (Table 2). However, the high human population pressures and historical land rights in India, result in many PAs having villagers living within them⁷, although expropriations continue in flagship PAs⁸. These residents have recognized rights of access and use, although with prescription and with significantly more restriction pressures than is the case outside PAs⁹.

National Parks are afforded the highest protection status, such that livestock grazing is totally prohibited, as is cultivation and private land holdings, along with the control of fire¹⁰. On the other hand, in Wildlife Sanctuaries a degree of local flexibility is usually afforded, such

that the Chief Wildlife Warden can control, regulate or prohibit grazing or movement of livestock, non-timber forest produce (NTFP) collection and so on. However, most PA managers in India view forest fires, grazing, and fuelwood and NTFP collection as a major threat to conservation outcomes and therefore seek to eliminate them¹¹. Fire control programmes and anti-poaching are an integral part of every PA management system, consuming a significant portion of the budget.

Invasive alien plants as a threat to biodiversity

The Millennium Ecosystem Assessment (2005) lists IAS as one of the five primary drivers of change in ecosystem composition, structure and function. Moreover, global climate change may well accelerate the rate of introduction and spread of IAS into areas where they were previously absent, or increase their performance relative to indigenous species¹². Invasive alien species can have large detrimental economic impacts on human enterprises such as fisheries, agriculture, grazing and forestry. Globally, the costs associated with the negative impacts of IAS have been put at US\$ 1.4 trillion per year, close to 5% of global GDP at that time¹³. A review by Clavero and García-Berthou¹⁴ concluded that IAS were the main cause of avifaunal extinctions worldwide, and the second highest cause for the extinction of freshwater fish and mammals. Overall, examination of the IUCN database on species extinctions implicated a negative role of IAS in 50% of those extinctions where a cause could be identified or inferred, second only to habitat transformation¹⁵. At a national level, Pimentel *et al.*¹⁶ estimated the environmental costs associated with IAS in the United States to be approximately US\$ 120 billion per year, and that IAS were the primary threat to about 42% of the indigenous species already on the threatened and endangered species inventories. At a sub-national level, Turpie *et al.*¹⁷ estimated at the turn of the millennium that the negative economic impact of IAS on ecosystem services in the Fynbos biome in South Africa (the world's most florally biodiverse area), was in the vicinity of US\$ 110 million per annum and that IAS threaten 55% of South Africa's Red Data plants and up to 60% of endemic freshwater fish species in the country. Born *et al.*¹⁸, however, caution that most studies calculating the economic

Table 2. Commonly encountered pressures on protected areas in India

Pressure	Prevalence of pressure in PAs	Origin of the pressure	Prevalence of management responses to the pressure	Strength of on-the-ground management response
Fire ^{29,43}	Very common	Internal	Common	Strong
Fuelwood collection ⁸	Very common	External	Common	Strong
Grazing by livestock ⁸	Very common	External	Common	Medium
NTFPs harvest ⁴⁴	Very common	External	Common	Strong
Invasive plants ^{28,45}	Very common	Internal	Absent	Absent
Animal poaching ⁴⁶	Common	External	Common	Very strong
Land encroachment ⁴⁴	Common	External	Common	Very strong
Shifting agriculture ⁴⁷	Common	Internal	Common	Very strong
Dam construction ^{47,48}	Rare	Internal	Case specific	Very strong
Mining activities ⁴⁷	Rare	Internal	Case specific	Very strong

impacts of IAS are underestimates and they require more robust methodologies.

India also suffers the impacts of IAS, many of which are highly invasive. Khuroo *et al.*² recently reported that the alien flora of India amounts to 1599 species, belonging to 842 genera in 161 families and constituting 8.5% of the total vascular flora found in the country. The negative impacts have been felt through losses to grazing, agricultural production and for some species, human health¹⁹.

Invasive alien species and protected areas in India

Given the significance of IAS in imperiling biodiversity throughout the world, there has been a steady development of international conservation policies and agendas to create awareness and support national agencies to develop national policies and strategies. For example, Article 8(h) of the Convention on Biological Diversity, to which India is a signatory, behooves countries to eradicate IAS which threaten local ecosystems, habitats and species. The Global Invasives Species Programme was set up to create awareness and provide advice and support in combating IAS.

However, these developments not seem to have filtered into PA policies and management plans within India, even though IAS can jeopardize the protection status of PAs²⁰. Table 2 shows that explicit policies and management responses on the control of IAS are absent from most Indian PA plans, whereas in many other countries (e.g. South Africa, USA) IAS control plans are an integral component of individual PA management plans.

This absence of a policy and management response is in spite of the growing numbers of the reports of IAS and their impacts in the Indian PAs. For example, Kerala Forest Research Institute and CAB International (2009) collaboratively compiled a manual on *Chromolaena odorata*, *Lantana camara*, *Mikania micrantha*, *Mimosa diplotricha* and *Parthenium hysterophorus* as major IAS in India. Most of the PAs in the Western Ghats and Eastern

Himalayas are highly infested by at least one of these five IAS, and the spread and negative impacts are increasing. For example, Sundaram and Hiremath²¹ monitored 134 plots across 540 km² in the Biligiri Rangaswamy Tiger Reserve between 1997 and 2008, and found that the percentage of *L. camara* stems per unit area increased from 5.5% in 1997 to 57.2% by 2008. Sharma *et al.*²² and Love *et al.*²³ have previously drawn attention to the rapid spread of *Lantana* throughout India, including in PAs. Recently, Prasad²⁴ noted how *Lantana* was rapidly spreading in Bandipur Tiger Reserve in southern India and that it suppressed grass cover and indigenous tree sapling density, which mirrors the results of Ramaswami and Sukumar²⁵ for selected species in Mudumalai Wildlife Sanctuary. Sharma and Raghubanshi²⁶ reported negative impacts of *Lantana* cover on herbaceous species diversity and cover in several areas of Central India. Such negative impacts of IAS are not limited to plant species, but also other taxa such as insectivorous and canopy birds in MM Hills Forest Reserve²⁷, certain antelope species²⁸ and rhinoceros²⁹, which are amongst the national priority species for conservation in India. IAS also negatively impact the livelihoods of local communities, with respondents at BR Hills and MM Hills reporting that *Lantana* invasion was reducing the grazing in the forest and NTFP harvests³⁰.

Ironically, however, some PA managers suggest that *Lantana* might be playing a positive role in that it provides cover for carnivores and some other game species³¹, seemingly forgetting that such a role was played by indigenous understorey species prior to being replaced by vast swathes of *Lantana*, now dominant in many PAs and also increasing.

Inaction against invasive species in Indian protected areas

Despite the clear negative trends and impacts, very few PAs in India have active and vigorous programmes to stem the tide against IAS. Love *et al.*²³ demonstrated the cut rootstock method as an effective physical removal

technique of *Lantana* in Corbett Tiger Reserve in the northern part India. It is cost-effective on a smaller scale (Rs 4000–5000 per ha), but expensive on a larger scale. Typically, the only extremely limited action to control IAS is to clear some areas as a component of fire control practices, not for their biodiversity impacts per se. However, the common practices are to cut and burn IAS that occur within a few metres of roadsides within the PA, which provides a firebreak against wild fires as well as some improved short-range visibility in the forest for viewing of game species. Our experience is that there are very few efforts to seriously control or remove IAS deeper in the forest, a feature also noted by Bhagwat *et al.*³¹. Indeed, Bhagwat *et al.*³¹ go so far as to suggest that PA managers in India have given up trying to eradicate IAS, but simply seek to control them. But it would be fair to mention that the fact that managers have given up on controlling *Lantana*, rests on the belief that it is uncontrollable. However, the same is not the issue with say control of fire, or poaching, or for the matter, firewood collection, where all these are easily managed. On the other hand, all the scientific evidence in the country, however small, shows that IAS are continuing to spread into newer areas and forming thickets in areas already invaded; a stark testament that the said control efforts along roadsides are having no effect.

We conducted a questionnaire survey among the retired forest officers of Karnataka, Kerala, Tamil Nadu and Maharashtra Forest Departments. They were asked the following: (a) When and where they had first seen *Lantana* during their first, second and third decades of service? (b) Was there any management plan for IAS such as *Lantana*? The key findings of this study were that more than 85% officers reported that there were hardly any management programmes to control IAS such as *L. camara* and more than 25% of them mentioned that IAS were cleared to raise plantations or clear-off roadsides inside the forest. The only method that they knew for control was to manually cut and burn. This is labour-intensive and offers only a short-term solution because the seed bank of the major IAS remains and hence reinvasion occurs rapidly. Some IAS, such as *Lantana*, which are buried deeply can be stimulated to germinate when exposed to light and fire³². Thus, the clearing and burning of a few metres along roadsides or for raising plantations has no impact whatsoever on the spread of IAS in Indian PAs.

In instances where clearing of larger areas deeper in the forests have occurred, they are associated with development of plantations of valuable timber species for revenue, or restoration plantings²². Our interaction with some of the forest managers of the PAs in the Western Ghats indicates that their species selection for plantations is based on three criteria: (a) fast growth, (b) good timber value and (c) unpalatability to game species. These criteria encourage the planting of exotic species such as eucalyptus, silver oak (*Grevillea robusta*) and acacia (*Acacia auriculiformis*); in effect replacing one IAS with another alien species. Thus, the clearing of IAS for establishment of plantations is not linked to biodiversity conservation objectives and outcomes. These plantations in PAs have their own impacts on forest ecosystem processes and biodiversity. For example, eucalyptus plantations are well known for their high water use, groundwater depletion, suppression of undergrowth species and plant species richness^{33–36}. Denslow²⁰ emphasized in the management guidelines for PAs that forest managers need to be careful and evaluate exotic species used in rehabilitation and restoration projects to avoid introducing or facilitating the spread of IAS.

On the surface, this inaction against IAS in Indian PAs is slightly complex to understand. The case against IAS because of their negative impacts on biodiversity and ecosystem services has been well argued internationally. Thus, why the absence of any coherent and meaningful response? We pose two possible explanations, namely (a) lack of appropriate policy or awareness and (b) perverse application of policy and regulations.

The suggestion that there is a lack of appropriate policy and awareness by conservation policy-makers and PA managers is undermined by India having a rich legacy of policies and regulations spanning almost a century relating to the control of IAS (Table 3). Thus, at the policy and legislative level at least, there seems to be a suite of enabling policies, even if there is no exclusive national legislation or policy addressing the problem of IAS³⁷. Nevertheless, the recently introduced operational guidelines of the ‘intensification of forest management scheme’³⁸ of the Ministry of Environment and Forests, New Delhi emphasizes the need for control and eradication of forest invasive species and providing assistance to state-owned or supported research institutions to carry out research into management or eradication of IAS.

Notably, the recent legislation of the scheduled tribes and other traditional forest-dwellers (Recognition of Forest Rights Act 2006) provides an enabling policy space for the participation of local communities in protection as well as management of PAs, forests and biodiversity in general. It recognizes and vests rights to the local Gram Sabha (village committee) to protect the wildlife and biodiversity of the PAs. In the Act, chapter 5(a), (b) and (d) strongly urges local communities to ensure the protection of ecologically sensitive areas, regulate the access to community NTFPs, and stop any activity which adversely affects wild animals, forests and biodiversity.

If these policies are not being acted upon at the management level, then there are either unseen barriers to implementation, or awareness at the management level is lacking. In case of the latter, training curricula at forestry and conservation institutions need to be revised to include sufficient materials and promote understanding of the threats to biodiversity and ecosystem services posed

Table 3. Examples of policies and Acts relating to invasive alien species in India

Policy on invasive species	Year promulgated
The Livestock Importation Act	1898
The Destructive Insects and Pests Act	1914
The Madras Agricultural Pests and Diseases Act	1919
The Travancore Plant Pests and Plant Diseases Regulation	1919
The Coorg Agricultural Pests and Diseases Act*	1933
The Patiala Destructive Insects and Pests Act	1943
The Bombay Agricultural Pests and Diseases Act	1947
The Rewa State Agricultural Pests and Diseases Act	1947
The East Punjab Agricultural Pests, Diseases and Noxious Weeds Act	1949
The East Punjab Agricultural Pests, Diseases and Noxious Weeds Act as extended to Himachal Pradesh	1949
The Assam Agricultural Pests and Diseases Act	1950
Plant Quarantine (Regulation of Import into India) Order	2003

*Coorg Noxious weed Act 1914 was proposed due to *Lantana* invasion in the coffee plantations and followed by heavy forest fire. However, the act was not implemented until 1933 due to the World War I and its heavy expenses for the British. Source: Agricultural legislation in India⁴⁹.

by IAS. Besides these, it is imperative that PA managers understand the need to manage IAS by developing active early detection programmes, prevent spread by active monitoring and develop corridors devoid of IAS for free movement of large mammals to maintain forest connectivity which is otherwise threatened by forest fragmentation. Unfortunately, because of a single-track mission (of eradication), many of the above-mentioned perceptions have hardly influenced, and entered, the management portfolio of PA managers.

The notion of a blind application of legislation as an explanation for inactivity against the threats of IAS originated during discussions with individual PA managers in the Western Ghats area during 2008–2010. These dialogues revealed perhaps a more insidious reason for the lack of meaningful programmes to control IAS in PAs. The explanation was provided, on several occasions, that the Wildlife Act (1972), which was the foundation of the growth of PAs in India, prevents the harvesting and removal of plant and animal materials from PAs. This interpretation of the 1972 Act was reinforced by a ruling of the Supreme Court order (Writ Petition (Civil) No. 171/1996) on 12 December 1996 (along with its subsequent extension in 2004) that prevents removal of dead, diseased, dying or wind-fallen trees, drift wood and grasses, etc. from any national park. Thus, a paradoxical situation arises when the very legislative Act used to conserve biodiversity in PAs can also be referred by the PA managers to prevent the eradication of IAS which actually threaten the same biodiversity. This is especially so for National Parks, where all harvesting is strictly prohibited. There is some leeway in Wildlife Sanctuaries. Management officials argue, therefore, that even with sufficient awareness and budget, they would be acting illegally.

However, the Supreme Court order also created a space for addressing the legal concerns through ordering the

constituting of a Central Empowered Committee (CEC) to look into the issues related to environment and forests. The track record of the issues handled by the CEC is impressive. The CEC has submitted numerous findings and recommendations to the Supreme Court on PA and forest policy and management issues. For example, farming encroachment in the Western Ghats and northeastern Himalayas, closure of mining activities to protect the flora and fauna in the Kudremukh National Park, and protecting endangered species such as olive ridley sea turtles in Odisha³⁹. So, although a strict reading of the Wildlife Protection Act (1972) does prohibit harvesting in PAs, the Supreme Court ruling provided a mechanism for this to be reviewed and for flexibility on a case-by-case basis. Thus, we see a compelling case for scientists/managers to approach the CEC for clear guidelines and exemptions regarding programmes for the vigorous control and removal of IAS from the PAs.

Conclusion

The negative impacts of IAS on biodiversity and ecosystem services are well known and decried throughout the world. In this article we have argued that the presence and increasing spread of IAS is threatening biodiversity in PAs (and outside) of India, thereby undermining the very reason for their existence. Yet, in the face of this severe threat, there appears to be very little coherent and meaningful response to limiting the impacts in PAs by halting the spread of IAS into new areas and removing them from the millions of hectares already invaded⁴⁰. The precise reasons for this lack of response need to be clearly understood and then addressed. Scientists and conservationists need to work together to address the scourge with vigour and urgency drawing on examples and best practices from around the world and adapting

them to the Indian context. Researchers need to categorize alien species according to the level of threat and rate of spread in each of the bioclimatic zones (e.g. Robertson *et al.*⁴¹). After the classification, broad and replicable management strategies need to be developed based on a range of options⁴² related to (a) early detection, (b) control and removal, and (c) ecosystem management and monitoring of IAS.

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LETTER

Mammal and bird species ranges overlap with armed conflicts and associated conservation threats

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Abstract

Armed conflicts are a pervasive global threat, but their implications for wildlife conservation remain unclear. Using a 30-year spatial dataset of armed conflicts in conjunction with species range maps, we found that conflicts during 1989–2018 occurred within at least 4291 (78%) and 9056 (85%) terrestrial mammal and bird species ranges, respectively. For 4% overall and 5–7% of threatened species, conflicts within ranges have been both widespread ($\geq 50\%$ of range) and frequent (≥ 15 years). Further, an examination of International Union for Conservation of Nature Red List assessments revealed that ranges overlap with armed conflicts is associated with declining population trends of threatened species and distinct species threat portfolios in which hunting and habitat loss and degradation are more prominent. Our findings call for greater recognition and understanding of direct and indirect threats from armed conflicts in species conservation assessments and underscore the importance of addressing conflict resiliency in conservation plans for a wide suite of species.

KEYWORDS

armed conflicts, endangered species, habitat loss, hunting, nontactical pathways, population decline, tactical pathways, threat, war and civil strife, wildlife

1 | INTRODUCTION

War and armed civil strife are pervasive global problems. Over the past 30 years, such armed conflicts have occurred in at least 120 countries, leading to thousands of human deaths, alongside massive human suffering and displacement (UNHCR, 2018). In addition to impacts on humans, there is growing recognition of threats posed by armed conflicts to global biodiversity (Daskin & Pringle, 2018; Dudley et al., 2002; Hanson et al., 2009). Although conflicts could result in inadvertent conservation gains (Martin & Szuter, 1999), most studies suggest negative impacts on biodiversity and habitats, underlain by a suite of direct

and indirect pathways (Gaynor et al., 2016). Conflicts are increasingly recognized as significant standalone threats, or threat multipliers, to already imperilled wildlife. For example, conflict-affected regions are four times more likely to experience deforestation compared with conflict-free areas globally (Landholm et al., 2019), and research from Africa suggests a link between recurring conflicts and population declines of large mammals (Beyers et al., 2011; Brito et al., 2018; Daskin & Pringle, 2018; Stalmans et al., 2019). Given that armed conflicts are widespread and overlap with regions of high biodiversity (Hanson et al., 2009) (Figures 1A and 1B), understanding the extent to which species are exposed to armed conflicts, and the nature of

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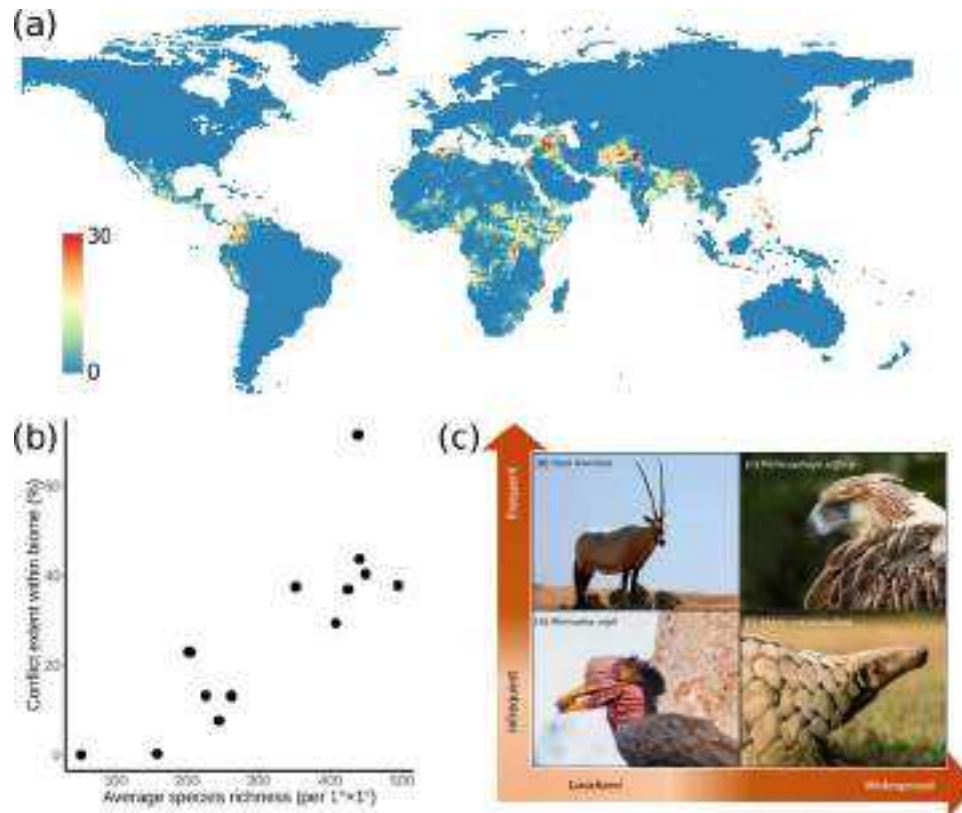


FIGURE 1 (A) Global patterns of armed conflicts between 1989 and 2018 depicted by the number of years of conflicts at a $1^\circ \times 1^\circ$ resolution [derived from UCDP GED (Pettersson & Öberg, 2020; Sundberg & Melander, 2013)]. (B) Armed conflicts are relatively more extensive within terrestrial biomes (Olson et al., 2001) that harbor more species on average per $1^\circ \times 1^\circ$ [combined mammal and bird species richness data derived from IUCN Red List (IUCN, 2019)]. See Figure S1 for biome labels. (C) Species exposure to armed conflict can range in spatial extent from absent or localized to widespread, and in temporal persistence from absent or infrequent to frequent. Representative threatened species of conservation concern from four extent-persistence contexts are depicted. Photo credits: Sanjitpaal Singh/jitspics.com, Charles J Sharp/Wikimedia Commons, Gerald Cubitt, Sinisa Djordje Majetic/Wikimedia Commons

threats facing species in conflict-affected regions, is crucial for conservation.

Conservation threats associated with armed conflicts may arise from both direct and indirect mechanisms. Direct threats could take the form of certain species being targeted by members of conflicting parties, such as African Elephants (*Loxodonta africana*) being hunted for meat and ivory (potentially to fund terror groups) in Mali and the Democratic Republic of Congo (Beyers et al., 2011; Brito et al., 2018), or Eastern Gorillas (*Gorilla beringei*) being killed inadvertently due to landmines in Rwanda (Kanyamibwa, 1998). Moreover, conflicts may modify habitats resulting in habitat loss and degradation both during conflict periods (Van Etten et al., 2008) and often after their cessation (Clerici et al., 2020; Heidarlou et al., 2020). Besides such direct pathways, armed conflicts also trigger wide-ranging socioeconomic and institutional changes that underlie indirect and often nontactical pathways, such as the weakening of regulatory institutions leading to over-exploitation of natural resources (Dutta, 2020; Gaynor

et al., 2016; Glew & Hudson, 2007; Negret et al., 2019). Taken together, it is evident that the impacts of conflicts on wildlife and habitats can extend beyond the period of active hostilities and amplify existing threats to species.

This study assessed the global pool of terrestrial mammal and bird species for spatial and temporal overlap with armed conflicts, and explored conservation threats associated with conflict overlap, focusing on species recognized by the International Union for Conservation of Nature (IUCN) as facing a greater threat of extinction. We assessed the extent and temporal persistence of armed conflicts across the geographical ranges of all extant mammal and bird species (and a subset comprising threatened species) using species geographic range maps in conjunction with data on armed conflict dates and locations from 1989 to 2018 (Figure 1C). Using IUCN species assessments, we examined whether and how species population trajectories and conservation threats differ based on the presence or absence of conflicts within their geographic ranges and between threatened and less-threatened species.

2 | METHODS

Data on armed conflicts were obtained from the Uppsala Conflict Data Program's Georeferenced Event Dataset (UCDP GED) (Pettersson & Öberg, 2020; Sundberg & Melander, 2013). Spanning all countries (except Syria), from 1989 to 2018, the dataset comprises the geographic locations and dates of 152,616 conflict incidents, where an incident is defined as the occurrence of organized violence with at least one reported fatality. We overlaid a $1^\circ \times 1^\circ$ global terrestrial grid on this dataset and extracted information on the total number of conflict incidents and the number of years of conflict reported within each grid cell (hereafter, gridded conflict dataset).

Spatial data on known geographic ranges of terrestrial mammal and bird species were obtained from the IUCN Red List (IUCN, 2019) and BirdLife International and Handbook of the Birds of the World (BirdLife International & Handbook of the Birds of the World, 2019), respectively. Extinct species were excluded from the assessment. Only known extant natural ranges were retained for all extant species, whereas former, introduced, and uncertain parts of species ranges were excluded from further analysis. We then overlaid the gridded conflict dataset, and for each species (mammals: 5533; birds: 10,619), estimated (1) conflict extent as a percentage of extant range; and (2) conflict frequency as the percentage of conflict years out of 30, averaged across all extant range grid cells that experienced any conflict during the focal period. Next, we extracted the most recent assessments of species population trends (decreasing, increasing, stable, or unknown) from the IUCN Red List database. We examined whether and how the proportion of species assessed as having a declining population trend differed between the set of species that overlapped with recent conflicts (2008–18) and the set of species that did not overlap with conflicts over the same period. As the response variable is binary (population decrease present or absent), we used a generalized linear model with a binomial error distribution, running separate models for threatened (CR, EN, or VU) and less-threatened species of mammals and birds.

Similarly, we extracted the most recent assessments of species conservation threats, where available, from the IUCN Red List database (IUCN, 2019). The IUCN defines conservation threats under 12 broad categories further split into 99 second- and third-order (sub-)categories. The 12 broad categories of conservation threats correspond to urban development, agricultural activity, energy production, transport, overexploitation, human disturbance, system modification, invasion and disease, pollution, geological events, climate change, and others (IUCN, 2019; Maxwell et al., 2016). For every species having threat assessments (2866 mammal and 3091 bird species), we

recorded the presence or absence of each of the 99 threat subcategories. With these data, we described each species' threat profile in terms of the "prominence" of the 12 broad categories, where prominence is defined as the number of threats belonging to a given category divided by the total number of identified threats expressed as a percentage. We then examined how the prominence of the 12 broad threats differed between species that witnessed conflicts within their range during 2008–18 and those that did not, treating mammals and birds separately and running separate models for all and threatened species. As the response variables are proportions, we used a generalized linear model with a binomial error distribution.

All data extraction, analyses, and visualization were performed using R 4.0.0 (R Core Team, 2020) and Q-GIS (QGIS, 2020).

3 | RESULTS

We found that at least 4291 (78%) terrestrial mammal species and 9056 (85%) terrestrial bird species experienced armed conflicts within their ranges during 1989–2018. Armed conflicts were widespread (i.e., overlapped $\geq 50\%$ of geographic range) for at least 1871 (34%) mammal and 3809 (36%) bird species (Figures 2A and 2B; Table S1). The number of species faced with frequent conflicts, defined here as those with the number of conflict years per $1^\circ \times 1^\circ$ cell averaging at least 15 years (50%) across conflict-affected cells, was 246 (4.4%) for mammals and 425 (4.0%) for birds (Figures 2A and 2B; Table S1). For 225 (4.0%) mammal and 390 (3.7%) bird species, conflicts were both widespread and frequent (Figures 2A and 2B; Table S1). For birds, restricting the above comparisons to breeding ranges alone (excluding nonbreeding and passage ranges) generated very similar patterns (Table S1). Exposure to frequent and widespread conflicts among threatened species (CR/EN/VU) ranged from 5% to 7% (Figures 2C and 2D; Table S1). In comparison, the IUCN currently recognizes 107 species (87 mammals, 20 birds) in total as threatened by "war, civil unrest and military exercises," most of which are not contained within the set of species identified as exposed to widespread and frequent conflicts in the current analysis (Table S1).

A substantially higher proportion of threatened species that overlapped with conflicts were associated with population declines (mammals: 86%; birds: 95%) compared with threatened species not overlapping with conflicts (mammals: 79%; birds: 76%) during 2008–18, according to generalized linear models ($p < 0.01$; Figure 3 and Table S2). Differences between species with and without overlap with conflicts were less pronounced among species of lower conservation concern ($p \geq 0.10$; Figure 3 and Table S2).

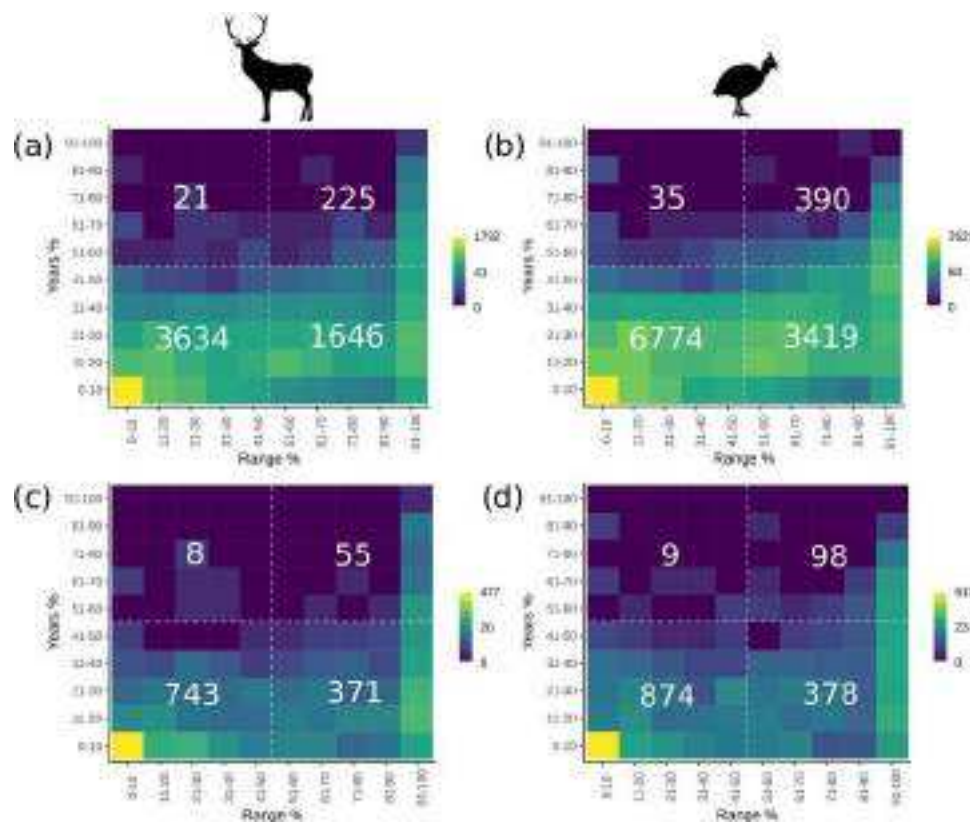


FIGURE 2 Heat maps showing the numbers of species with different levels of armed conflict in their ranges in terms of conflict extent (range %; X-axis) and persistence (years %; Y-axis). Range % describes the percentage of a species geographic range that experienced armed conflicts over the 30-year period from 1989 to 2018. Years % describes the average duration of conflicts within species ranges as a percentage of 30. The color gradient depicts the numbers of species within each 10 × 10 conflict extent %-persistence % combination. The total numbers of species falling within each 50 × 50 extent %-persistence % quarter are displayed in their respective quarters. Panels correspond to all mammal (A) and bird (B) species, and threatened mammal (C) and bird (D) species

Narrowing the comparisons to the tropics and subtropics (35°S–35°N) alone, because of the concentration in this zone of mammal and bird diversity and reported conflict incidents, did not alter the above patterns (Table S2).

Generalized linear models showed that overlap with conflicts was associated with greater prominence of threats from biological overexploitation (e.g., hunting, logging) relative to other threats for all (7.3% more prominent) and threatened (3.9% more prominent) mammal species, compared with mammals that did not overlap with conflicts during the 2008–18 period, based on threat assessments by the IUCN ($p < 0.01$; Figure 4 and Table S3). Human disturbances, including “war, civil unrest and military exercises” (all species: 1.4%) and agricultural activities (threatened species: 6.2%), were also more prominent among the conflict-overlapping suite of mammals ($p < 0.01$; Figure 4 and Table S3). By contrast, the prominence of threats from invasive species and disease, and climate change, was lower among conflict-affected mammals (−1.8% to −5.5%; $p < 0.01$), while other threats to mammals did not differ consistently based on overlap

with conflicts during the focal period (Figure 4 and Table S3). For birds, threats associated with overexploitation (all species: 2.1%; threatened species: 3.9%) and land-use intensification, particularly agricultural activities, energy production, system modification, and pollution, were more prominent among conflict-affected species (all: 1.2%–4.8%; threatened: 1.1%–8.5%) compared with ones that did not overlap with conflicts during 2008–19 ($p \leq 0.01$; Figure 4 and Table S3). Threats to birds from invasive species and disease, geological events (all species), and climate change (threatened species) were less prominent relative to other threats (−0.3% to −13.6%; $p < 0.01$) among bird species exposed to conflicts (Figure 4 and Table S3). Narrowing the comparisons to the tropics and subtropics (35°S–35°N) alone did not alter the above patterns (Table S3).

4 | DISCUSSION

As the recognition of conservation threats associated with armed conflicts continues to expand, our study sheds light

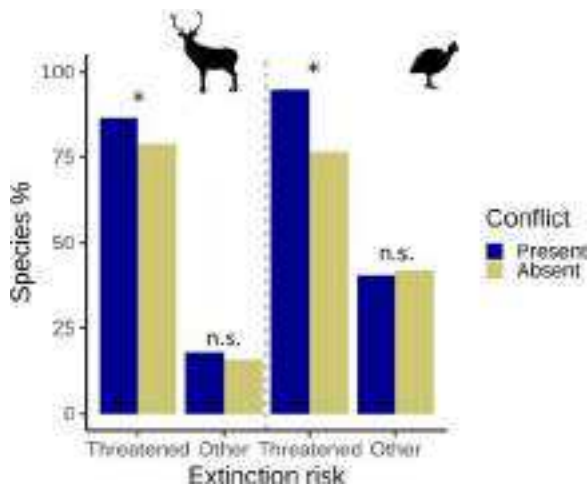


FIGURE 3 The percentage of mammal and bird species showing population declines among species that overlapped with conflicts during 2008–18 (present) versus species that did not (absent). Percentages for threatened and less-threatened species are shown separately. * depicts a statistically significant difference at $p < 0.01$ based on binomial generalized linear models. See Table S2 for model details

on three key characteristics of this threat based on a global analysis. First, we show that armed conflicts potentially affect an extensive suite of terrestrial mammal and bird species, with over 70% of all species potentially encountering conflicts within their ranges at present or in the recent past, including 4% (615 species) with both widespread ($\geq 50\%$ of range) and frequent (≥ 15 of 30 years) exposure to conflicts. Notably, conflicts were more widespread and frequent (up to 7%) among species classified by the IUCN as threatened with extinction. For these species, with small range sizes, low population densities, slow life histories, and other traits that make them susceptible to a wide range of threats (Purvis et al., 2000; Harris & Pimm, 2008), armed conflicts could constitute a significant threat multiplier. Our findings suggest that armed conflicts potentially threaten a wider suite of terrestrial mammal and bird species than is currently recognized (i.e., 615 vs. 107 species by the IUCN) and therefore warrant greater consideration in species threat assessments and conservation strategies.

Second, we found that range overlap with conflicts was associated with population declines (as per IUCN assessments) for the large majority of threatened mammal (86%) and bird (95%) species. This was a higher percentage compared to threatened species not overlapping with conflicts (76%–79%) and less-threatened species with or without conflict overlap (16%–42%). This finding underscores the importance of addressing conflict resiliency in conservation plans for threatened species. Planning for conflict resiliency could encompass several approaches depending

on circumstances and focus both within and beyond active conflict zones. For example, captive breeding and reintroduction programs may need to be considered for highly endangered species that experience conflicts throughout their ranges (Davies, 2017; Farhadinia et al., 2020; Harding et al., 2007). For species whose ranges extend beyond active conflict zones, proactive conservation measures in non-conflict areas could play a role in facilitating post-conflict recovery (McDonald-Madden et al., 2008).

Our third key finding is that range overlap with armed conflicts is consistently associated with threats such as hunting and habitat modification/degradation, including agricultural expansion, natural resource extraction, and pollution. We found that these threats were more prominent (i.e., reported more frequently relative to other threats) in the threat portfolios of species that overlap with conflicts, while climate change, geological events, and invasive species were equally or less prominent, compared with the portfolios of nonconflict-overlapping species. While it is possible that hunting and other extractive threats could also be reduced in some instances, leading to conservation opportunities in conflict landscapes (Martin & Szuter, 1999), we found little evidence for this at the global scale. Although our study does not examine the mechanisms linking conflicts to these threats, evidence from other studies suggests a few potential pathways. For example, hunting for food by members of warring groups (Beyers et al., 2011), and deforestation, hunting, and other forms of natural resources extraction by human communities disrupted and displaced by conflicts (Baumann & Kuemmerle, 2016; Glew & Hudson, 2007; Landholm et al., 2019) are known to exacerbate these threats in conflict landscapes.

While our findings establish general associations between armed conflicts, species population declines, and conservation threats, they cannot confirm armed conflicts as driving the observed patterns. This is because our global analysis cannot control for potential confounding factors, such as cooccurrence of armed conflicts with other drivers of species decline and conservation threats (e.g., conflicts more likely to occur closer to human population centers). Another caveat is the uncertainty associated with coarse-scale global datasets of species ranges and conflict occurrence, and the qualitative nature of IUCN population trend assessments, which can bias outcomes in either direction. In order to reduce uncertainty and verify the mechanisms underlying these associations, empirical research and monitoring is key. Research priorities for strengthening conservation planning include reliable estimation of population sizes and trends of conflict-affected species (Daskin & Pringle, 2021), elucidation of the various pathways linking conflicts to conservation threats (Gaynor et al., 2016), and examination of how the prevalence

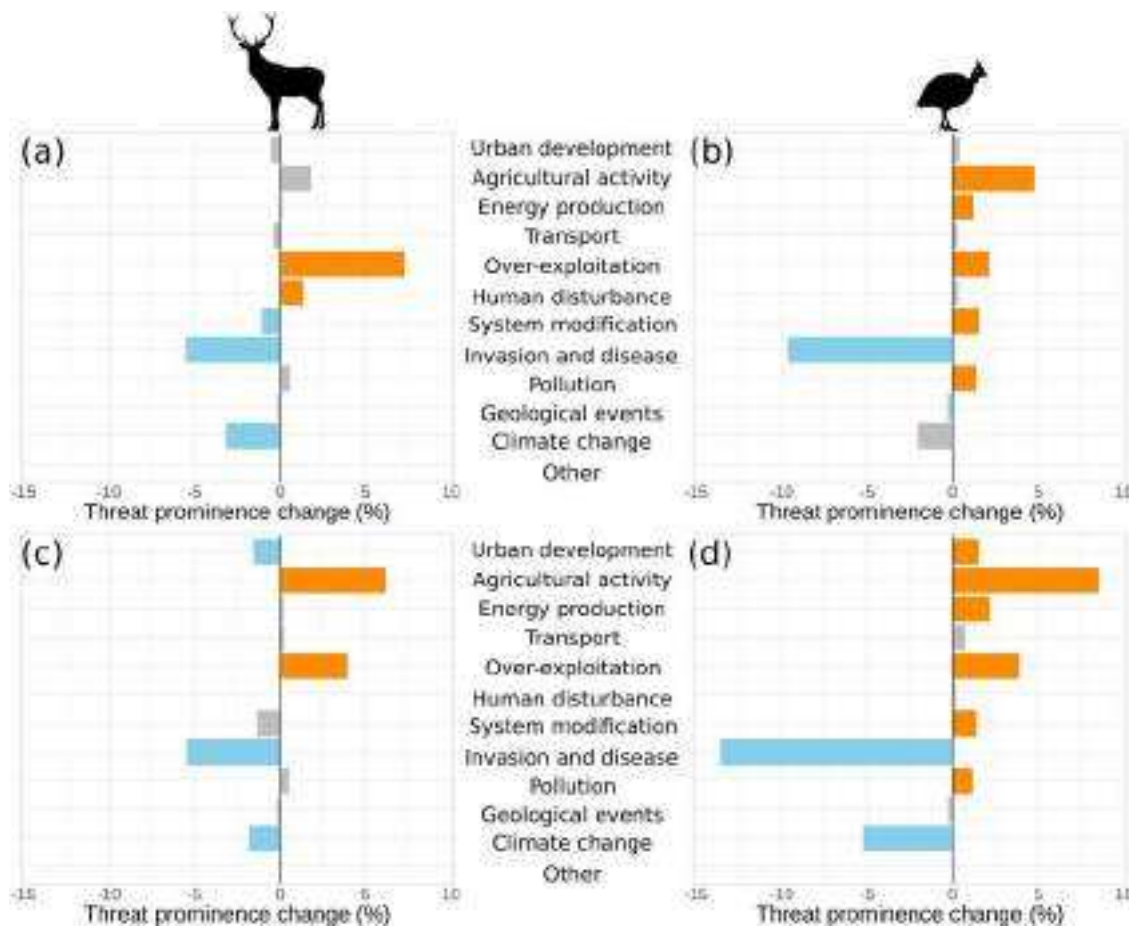


FIGURE 4 Increases (consistently positive, orange), decreases (consistently negative, blue), or no differences (grey) in the prominence of different threats associated with species that overlap with conflict, relative to species that do not overlap with conflict, for all mammal (A) and bird (B) species, and threatened mammal (C) and bird (D) species, based on binomial generalized linear models. See Table S3 for model details

and relative importance of these pathways differ among species and functional trait groups (Stalmans et al., 2019).

Collectively, and data limitations notwithstanding, our findings highlight armed conflicts as a potential conservation threat—and/or threat multiplier—for a wide suite of species globally. Given that the numbers of species identified by this study as having widespread and frequent overlap with armed conflicts substantially exceed the numbers for which conflicts are currently listed as a threat, our findings call for greater recognition of this threat in species conservation assessments and plans. Our coarse-scale population trend analysis also suggests an elevated concern for threatened species, highlighting that while it can be practically challenging, empirical research and monitoring of species populations over space and time within armed conflict landscapes are urgently needed (Daskin & Pringle, 2021). Finally, we highlight that armed conflicts are associated with and potentially exacerbate (directly and indirectly) other major conservation threats such as hunting and habitat loss (Gaynor et al., 2016), which is an essential

consideration in the design of conservation programmes for species threatened by armed conflicts.

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AUTHOR CONTRIBUTIONS

U.M., A.H., and A.M.O. conceived the study. U.M., S.J.S., A.M.O., and A.H. collected and analyzed the data. U.M.,

A.M.O., and A.H. drafted the manuscript. All authors provided feedback and approved the final manuscript.

ETHICS STATEMENT

No primary data were collected in this study. All data presented in the manuscript are from publicly available datasets not requiring additional ethical considerations.

DATA ACCESSIBILITY STATEMENT

Data were downloaded from public-access datasets cited in the references section. Derivatives of these datasets used in this study along with the R script used for data processing, analysis, and preparation of figures and tables are provided in the Appendix.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

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BRIEF

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CEL LEGAL BRIEF – II

NEW STATE VILLAGE FOREST RULES

Are Madhya Pradesh and Maharashtra redefining
participatory forest management in India?





INTRODUCTION

THE LEGAL-HISTORICAL CONTEXT OF VILLAGE FORESTS

The National Forest Policy, 1988, followed by the introduction of Joint Forest Management ('JFM') in 1990, sought to introduce a departure from the centralized approach of the Indian state to forest management¹ to a more participatory one. Following the adoption of the central JFM Resolution by states in the 1990s and into the first decade of this century, the adoption of the Panchayats (Extension to Scheduled Areas) Act, 1996 and the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act ('FRA') in 2006, the policy and legal framework for recognition of rights of the forest-dwelling and forest-dependent communities seemed to have been put in place.

Even while all of the above was happening, there was almost no use made of a strong statutory mechanism for creating village forests that has been available since 1927, under the Indian Forest Act ('IFA').² The provision says that *"The State Government may assign to any village community the rights of Government to or over any land which has been constituted a reserved forest... All forests so assigned shall be called village-forests."*³ A general critique of JFM in India under variety of names, such as community forest management (CFM) or community based forest management (CBFM) and participatory forest management (PFM), has been that it continues to function on the basis of executive orders that 'do not have the sanctity and the security of a statute'. In this context it argued that only an arrangement such as the Village Forests under the IFA makes sense, whereby both a forest patch and the body of village users with rights to that patch are identified, and the rules lay down the rights of the body so constituted to managing the forest patch.⁴ The fact that two large states have recently sought to use the Village Forest provision under the IFA and laid down elaborate rules for managing such forests should then ordinarily be seen as fulfilling a need felt for a longtime. Yet, as the paragraphs below shall show, there is plenty in the rules to be concerned about. The present legal brief is an expression of this concern.

MADHYA PRADESH AND MAHARASHTRA ACTIVATE THE VILLAGE FOREST PROVISION UNDER IFA

The fact that Maharashtra in 2014 and Madhya Pradesh in 2015 have notified rules for the demarcation and management of village forests in quick succession is interesting, because Maharashtra had seen the earliest recognition of Community Forest Rights ('CFR') in the country,⁵ and the fact is that the two states together account for almost one-fifth of India's total forest cover.⁶ These two states also have a well-documented history of conflict between forest-dwelling communities and state forest machinery.⁷

Therefore, increased activity in these states around a largely dormant provision raises important questions, and merits a closer examination.

The Indian Forests (Maharashtra) (Regulation of assignment, management and cancellation of village forests) Rules, 2014 ('MVFR') and the Madhya Pradesh Village Forest Rules, 2015 ('MPVFR'), broadly, provide for the notification and management framework of village forests – rights and obligations of the management committees, their composition, constitution, functioning and accountability. Through the provision for such management committees, they establish a framework for the assignment and exercise of rights over appropriation and distribution of forest produce for dependent village communities. The management is carried out according to a plan, which is generally prepared annually under the auspices of the state forest departments. Most of the rights of collection and disposal of forest produce are also subject to interventions by the forest department.

HOW MUCH RIGHTS SHOULD VILLAGE COMMUNITIES HAVE IN MANAGING FORESTS? – THE MANDATE UNDER SECTION 28, IFA

A quick glance at MVFR and the MPVFR as above suggests that significant powers of management of forests and access/ distribution of forest produce have been retained with the state authorities, while assigning only a portion of these to the village communities. How much rights then should village communities have in managing forests? Does Section 28 of the IFA under which these Rules have been made by MP and Maharashtra provide guidance? Section 28, IFA only says that “*the State Government may assign to any village community the rights of Government...*” Under Colonial rule this simple provision was even, almost fantastically, interpreted to mean that village forests were to be under the management of the government officer!⁸ However, the real intent behind the provisions was laid bare by the Sir B.H Baden-Powell, an influential ICS officer in British India, who in his classic treatise for Forest Officers said “*...village forests would probably be most wanted in cases where a bare proprietary right belongs to Government, but where the rights of the village are already so extensive that Government could not conveniently carry out a settlement of the rights..*”⁹ Not surprisingly then, that by the time the IFA came into force in 1927 the Royal Commission on Agriculture in India, that made inquiries into the uses of forest lands under the management of the forest department, commented that the most promising method of establishing village forests was to handover to village management or village panchayats certain wooded areas adding further that “the management by the people of the forests close to their villages possessed so many desirable features, that every effort should be made to ensure its success.”¹⁰ All of the above makes it abundantly clear that invoking the village forest provision under the IFA had to mean recognizing the extensive rights of the village to management of such village forests. In this sense Section 28 IFA is different from Section 80, IFA as

the latter section contemplates management of forest where “Government and any person is *jointly interested* in any forest...” Thus, in some states JFM/CFM/PFM resolutions premised on joint management only invoke Section 80 IFA and not Section 28. This also affirms the position that the assignment of rights to village community under Section 28 is intended to be extensive and comprehensive and not partial where Government also remains jointly interested with the community in managing forests. As the discussion hereinafter will show, both the MPVFR, 2014 and MVFR, 2015 largely depart from this mandate inherent in Section 28, IFA.

DESPITE GOI RESERVATIONS, VILLAGE FOREST RULES APPLIES TO FRA AREAS

The MPVFR apply to the entire state of Madhya Pradesh.¹¹ This means that they also apply to the areas where the FRA is in force. On the other hand the MVFR are, broadly speaking, not applicable to areas where the FRA applies or where CFR have been settled under the FRA.¹² However, here too a proviso has been added empowering Gram Sabhas across the state (and therefore also in scheduled and FRA areas) to adopt the MVFR, through resolution.¹³ This means that if the GS so resolves, it can make the MVFR applicable even to areas where the FRA applies. In effect, thus, both the MVFR and MPVFR have the potential to substitute the rights regime in place in FRA areas, with that under the VF Rules. *[See the table below comparing the rights under the MPVFR, MVFR with the FRA and PESA regimes.]* Practically, however, there may well be willingness on the part of some Gram Sabhas to adopt a regime which *prima facie* gives them a share in proceeds from bamboo and other forest produce (see Rule 4 of the MVFR), as opposed to the many riders which come with rights which are actually granted under the FRA, in practice. That said, the mischief that the Proviso to Rule 2(3) of the MVFR is vulnerable to is also a reality – the forest department in Maharashtra has already been reportedly forcing the passing of resolutions by Gram Sabhas to implement the MVFR.¹⁴

Given the strong rights regime under the FRA, substituting that regime with the VF Rules which generally retain a greater share of management and control with the forest department, cannot be legally justified.¹⁵ To be sure in mid of 2014 both the Union Ministries of Tribal Affairs and Environment had objected and argued that the new MVFR in Maharashtra were “prima facie in violation” of the FRA which gives people living in, or depending on, forests legal rights over the land and forest produce. This forced Maharashtra to write a letter to the Central Government saying specifically therein: “*For removal of doubts... it is also clarified that the (MVFR)...shall have no effect whatsoever on process of recognition and vesting of rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006*”¹⁶ Interestingly, Maharashtra decided to seek further legal opinion on the matter but did not withdraw the Rules. The controversy, however, did not prevent Madhya Pradesh from issuing its own VF Rules i.e. MPVFR a year later, extending it to the entire state including thus areas where the FRA is also applicable.

Consequent to the above observations, there may be made out as well as case for the issuance of the VF Rules being in violation of Constitutional principles as well – Article 338-A(9) requires states to consult the National Commission on Scheduled Tribes on ‘*all major policy matters affecting scheduled tribes*’. Moreover, Rule 2(3) of the MVFR, *inter alia*, creates a distinction (inasmuch as the applicability of the MVFR is concerned) between (i) communities who have already acquired rights under the FRA, and (ii) communities who have not. This distinction is arguably opposed to the spirit of Article 14 of the Constitution, which essentially protects all persons from arbitrary legal discrimination. Here, a distinction is sought to be made between communities whose rights have *already been settled*, and communities whose rights have not, which includes those whose applications have been filed and are pending for settlement (since this is not otherwise clarified). This is evidently problematic and against the Indian Constitutional ethos – specifically, the mandate under Article 14 to essentially disallow discrimination without any rational basis, by law.

TABLE: COMPARISON BETWEEN MVFR, MPVFR AND THE FOREST RIGHT ACT (FRA) AND PESA REGIMES

S. No.	Parameter	Madhya Pradesh Village Forest Rules, 2015 [under S.28 of the IFA]	Indian Forests (Maharashtra) (Regulation of assignment, management and cancellation of village forests) Rules, 2014 [under S.28 of the IFA]	Forest Rights Act, 2006 (read with FR Rules, 2008 & 2012) [FRA]	The Provisions of Panchayats (Extension to Schedule Areas) Act, 1996 (PESA)	Remarks
1	Provision for livelihood needs	Nistar and paidawar as defined in Rule 2 (includes timber of unreserved trees). Tendu leaves not included.	Nistar rights, though not specifically defined.	Minor forest produce as defined in Section 2(i) of the FRA. Bamboo and tendu leaves both included.	Minor forest produce not defined but their ownership - and hence complete rights over them - vested with Gram Sabha and Panchayats.	Scope of provision is seemingly wider under the Forest Rights regime (includes both bamboo and tendu leaves), although provision for harvesting timber is made only under the MPVFR
2	Rights/title to forest produce	Permission to obtain, either 'free of charge or on payment' to the Gram Van Samiti (GVS).	First charge on minor forest produce.	Title to Community Forest Resources grants 'rights of ownership, access to collect, use and dispose of minor forest produce which has been traditionally collected, within or outside village boundaries'. Its S. 3 of the FRA provides, in theory, for a variety of rights over forest resources. It should be noted, however, that such sweeping titles are seldom granted in practice, and the de facto extent of rights settled under the FRA are much narrower than the de jure prescriptions.]	S. 4(m)(ii) says that "A State Legislature shall ensure that the Panchayats at the appropriate level and the Gram Sabha are endowed specifically with.. the ownership of minor forest produce."	Rights of use/disposal of minor forest produce more conditional and less comprehensive under the VF regime, in sharp contrast to the prescriptions under the FRA and PESA.
3	Role of Village/ Traditional Community in Management	Plan to be prepared by the Range Officer; Gram Sabha (not GVS) has a purely consultative role. Final approval by Sub-divisional FO.	More involvement than under the MPVFR, but microplan and bamboo harvesting to be as per state approved methods/working plans. Right of cancellation of VFs is also reserved with the forest department.	Rule 4 of the Forest Rights Rules provides for Gram Sabha involvement to a larger extent, in the preparation of management plans for community forest resources, as well as grant of approvals for transit permits, use of income from sale of forest produce. It is not totally independent of forest department involvement; as the management plans for community forest resources are required to be integrated with the working/management plans of the forest department.	Gram Sabha recognized and declared as competent to safeguard community resources.	A large portion of rights retained with the forest department under the VF regime. Under the FRA regime, the Gram Sabha has a higher degree of involvement and control over management of forest resources.
4	Dispute Resolution	No provisions.	Conflicts relating to illegal collection of minor forest produce, grazing and 'irregularities in the exercise of forest rights' to be referred to VWS with the approval of the GS.	Petitions available against Gram Sabha resolutions (on the nature and extent of rights), to the Sub-Divisional and District Level Committees	S. 4(d) says that "every Gram Sabha shall be competent to safeguard and preserve the traditions and customs of the people, their cultural identity, community resources and the customary mode of dispute resolution."	No provision any mechanism for settling disputes in the MPVFR, which are certain to arise over allocation of nistar/paidawar, rates etc. between the village body and the forest department, is glaring. The MVFR have a provision but no guidance, limitation etc. The FRA regime has a well defined, multi-tier framework for dispute resolution.

Note: Karnataka, Odisha and Uttarakhand had all enacted Rules under S.28(2) of the IFA [or S. 31, in case of Odisha]. These versions have many micro-distinctions when compared to the MVFR and MPVFR examined herein, but in essence they all fall short of actual empowerment of village communities in forest management.

SPECIFIC SUGGESTIONS FOR STRENGTHENING VILLAGE FOREST RULES

The above discussion shows that both the Madhya Pradesh and Maharashtra VF Rules have the potential to substitute the rights regime in place in FRA areas, with that under the VF Rules. Thus both the Rules need to come up with clear amendment saying categorically that the Rules do not apply to areas where FRA is applicable. Besides the above, the following discussion points to specific reform areas and improvement needed to strengthen the MPVFR and MVFR.

Management plan

Under the MPVFR, the management plan, which governs all aspects of VF management ‘*including cutting of trees, removal of timber and grazing*’ – is to be prepared by the Range Officer; with the GS only required to be consulted during the process,¹⁷ and the GVS not involved at all.¹⁸ The process for preparing the microplan under the MVFR is slightly more participatory, but is still subject to the final approval of the forest department.¹⁹ The GVS/GS needs to have a greater role in the preparation of the management plan, since the provision for village forests in the IFA presupposes (as explained above) their traditional know-how and ability to sustainably manage their forests.

Financial powers and obligations

A certain degree of financial independence is essential for effective management. However, the power to fix rates payable by the community to the GVS for nistar is given to state agencies,²⁰ without any involvement of the GS or GVS. Further, there are no guidelines for accounting and allocation of funds in the MPVFR. Effectively, the amount of funds receivable, and their manner of utilization by the GVS, is to be unilaterally decided by the designated authorities – a far cry from the forest policy goals. The VVS is on a slightly better footing – but only slightly.²¹ Our findings suggest that the financial and accounting provisions of the Uttarakhand Panchayati Van Rules, 2005 (‘UPVR’) provide a comprehensive model in this regard and are worth replicating in other states.

Accountability

The Van Vyavasthapan Samiti (‘VVS’) under the MVFR and Gram Van Samiti (‘GVS’) under the MPVFR are, in theory, constituted by and responsible to the Gram Sabha.²² The GVS has the unique power to enter into agreements (with government or private companies) to forego a share of the forest produce entitlements of the entire village.²³ Nistar rights are impliedly included within the scope of such agreements, thereby creating a potential legal space for private companies to influence a GVS into sharing most, or even all, of its forest produce entitlements. The rationale for why there is a scope for such agreements in VFs is not amply clear, although it is probably well-intended with the aim of providing economic incentives to the village community to embrace this regime. Space for such agreements should exist, supplemented with safeguards, in the form of adequate representation of all user groups in the GVS, and, the village body/GS should be made the final vetting authority for such agreements.

Sharing and Dispute Resolution

Given the forest cover and population across the two states, there are bound to be instances of multiple village communities being dependent on the same forest area. Provisions for sharing of management responsibilities and produce of such shared VFs thus become imperative. It is useful to note that the Orissa Village Forestry Rules, 1985 ('OVFR') allows for sharing of VFs between more than one community.²⁴ Building upon this, there should be a provision for proportionate representation of different villages in the GVS/VVS, to ensure fair participation of all in management of the VF and proceeds/nistar. An independent dispute settlement mechanism (completely absent from the MPVFR) would be a necessary supplement to this.²⁵

Transaction of business

Guidelines or a framework for transaction of business and record-keeping are a *sine qua non* for efficient functioning of the GVS/VVS, given that this institution is at a nascent stage still. The lack of procedural guidelines for functioning of the GVS requires to be rectified in the MPVFR. Chapter III of the Karnataka Forest Rules, 1969 and the UPVR provide for transaction of business and record-keeping in good detail. The Karnataka Rules also provide for periodicity of meetings and maintenance of records. These provisions should all be incorporated in the MPVFR, as a greater level of certainty in the law will translate into smoother functioning, while leaving little room for interference and petty disputes. Adequate provision for this has been made for the VVS in the MVFR, with scope for incorporation of the exemplary provisions mentioned above.²⁶

Rights- obligations mismatch

Even on a cursory reading of the MPVFR, it is evident that significant powers of management and distribution have been retained while assigning only a portion of these (largely in the form of duties and obligations) to the village communities.²⁷ The MVFR are much more balanced in this regard, but have provisions which are open to motives that can be questioned. To illustrate, Rule 7(d) of the MVFR, when read with Rule 1(3) and the proviso thereto, can found a case for the assertion that the MVFR may well supplant the FRA regime, ostensibly with the intention of retaining revenue from minor forest produce with state authorities. Rule 4(4) buttresses this claim further, since bamboo is a part of minor forest produce under the FRA but not under the MVFR – it is probably not a coincidence that it accounts for a major chunk of revenue of the state forest department as well.²⁸

Notification

Under the IFA, VFs can be notified out of reserved forests (but Maharashtra and certain other states have amended the Act to enable them to notify VFs out of both reserved and protected forests). The IFA as amended by Madhya Pradesh does not allow VFs to be notified out of protected forests. Intuitively, since there are bound to be communities living around and dependent on protected forests for their livelihood (and given the high level of resource dependence on these forests and their comparatively low level of legal protection), it would make sense to include these as areas from which VFs may be notified.²⁹ Thus to enable Madhya Pradesh to create VFs out of Protected Forests too a state amendment to the IFA would be needed – a legislative exercise that MP may undertake forthwith

Clearing and Breaking

Rule 13 of the MPVFR permits the clearing and breaking of land for the building of schools, hospitals, and other civic amenity structures. This is problematic in two major ways:

1. It does not provide a ceiling on the area of land that may be diverted for this, unlike a similar provision in the FRA [section 3(2)], which can be especially problematic in case of diversion for construction of roads
2. It is ambiguous on whether procedure under the Forest (Conservation) Act, 1980 is required to be followed or not, in cases of such diversion.

While the intent of the section is well-meaning, and is almost certainly in consonance with the needs and aspirations of the village communities, there ought to be a little more clarity as to the extent of land that may be diverted for such purposes (to avoid unchecked diversion of forest land, which is also important to the sustenance of the village community), as well as a clarification on whether the Madhya Pradesh government intends a bypass of the forest clearance process for village forests.

INFERENCES AND RECOMMENDATIONS

- Given that the provision (Section 28) for the creation of VF has been largely lying dormant within the Indian Forest Act, 1927, two large states i.e. Madhya Pradesh and Maharashtra notifying detailed VF Rules i.e. MPVFR, 2014 and MVFR, 2015 is interesting, and merits closer scrutiny. The new found interest in VF provision has also manifested in the draft National Wild Life Action Plan 2016, which calls for better conservation efforts through a strengthening and expansion of village forest institutions across the country.
- The assignment of rights to village community under Section 28, IFA is intended to be extensive and comprehensive and not partial where Government also remains jointly interested with the community in managing forests. The MPVFR, 2014 and MVFR, 2015 along with other State Rules on Village Forests miss this mandate inherent under Section 28.
- Despite GOI's position that the MVFR, 2014 were "prima facie in violation" of the FRA, Maharashtra did not withdraw the rules, and this also did not prevent Madhya Pradesh from issuing new VF Rules i.e. MPVFR a year later extending it to the entire state and thus areas where the FRA is also applicable. Both the MVFR and MPVFR need to come up with clear amendments saying categorically that the Rules do not apply to areas where FRA and PESA are applicable, to ensure the Constitutional validity of the Rules.
- Analysis of the Village Forest Rules of Madhya Pradesh and Maharashtra suggests that significant powers of management (of VFs) and distribution (of minor forest produce) have been retained with the state authorities, leaving the village communities with a weaker, qualified set of rights.
- The Van Vyavasthapan Samiti ('VVS') under the MVFR and Gram Van Samiti ('GVS') under the MPVFR needs to have a greater role in the preparation of the management plan, clear financial powers, and stronger norms for accountability of these village level bodies to the Gram Sabha since the provision for village forests in the IFA presupposes the ability of the village community to sustainably manage their forests.
- While in Maharashtra, VFs can be notified out of both reserved and protected forests, the case is not the same for Madhya Pradesh. A specific amendment to this effect to the IFA in Madhya Pradesh, may be brought out, enabling the State Government to notify VFs out of both reserved and protected forests (given the high level of dependence on protected forests, and relatively lower conservation value).

ENDNOTES

- 1 D. Sarker, “Joint Forest Management: Critical Issues” Vol. 44(4) *Economic & Political Weekly* (2009) at 15-17.
- 2 Some believe that this was not entirely strange, given the subliminal historical attitudes of the Indian state towards forest conservation, and consequent criminalization of the activities of traditional communities. *See generally* United Nations Development Programme, *Recognition of Community Rights under Forest Rights Act in Madhya Pradesh and Chattisgarh, Challenges and Way forward: Final Report* (2012) available at: <http://www.undp.org/content/dam/india/docs/DG/recognition-of-community-rights-under-forest-rights-act-in-madhya-pradesh-and-chhattisgarh-challenges-and-way-forward.pdf>
- 3 See Section 28 of the Indian Forest Act.
- 4 Lele Shrachchandre, *What is Wrong with Joint Forest Management*, in Lele Shrachchandre, Maon Ajit (Ed.) *Democratic Forest Governance in India*, OUP, 2014
- 5 In the village of Menda Lekha (Gadchiroli district). *See* Vasundhara & Kalpavriksh, *A National Report on Community Forest Rights under Forest Rights Act: Status & Issues* (2012) at 20-21.
- 6 Forest Survey of India, *India: State of Forests Report* (2013) at 17.
- 7 Anonymous, “Above All Differences” *Down to Earth* (April 30, 2000) available at <http://www.downtoearth.org.in/coverage/above-all-differences-18029>; *Report of the National Committee on Forest Rights Act* (2010) at 43, available at http://fracommittee.icfre.org/FinalReport/FRA%20COMMITTEE%20REPORT_FINAL%20Dec%202010.pdf.
- 8 See *Explanatory Notes on Forest Law*, Imperial Forest College, Dehradun, Superintendent Government Printing, Calcutta, 1913, p.39 as quoted in Neena Ambre Rao, *Forest Ecology in India*, Foundation Books, 2008.
- 9 B.H. Baden Powell, *Manual of Jurisprudence for Forest Officers*, 1882 ; Natraj Publishers, First Indian Edition 2002.
- 10 Report of the Royal Commission on Agriculture in India, Mumbai 1928, Reprint Agricole Publishing Company, New Delhi, 1982, pp.258--260
- 11 Rule 1(2) of the MPVFR..
- 12 Rule 1(3) of the MVFR.
- 13 See proviso to Rule 1(3) of the MVFR.
- 14 S. Vyas, “Caught in the Acts” *The Hindu* (January 31, 2016) available at <http://www.thehindu.com/news/cities/mumbai/caught-in-the-acts/article8174709.ece>
- 15 See Section 3 of the FRA, 2006. It is also noteworthy that the forest department - and not the Nodal Agency prescribed under Section 11 of the FRA - is the *de facto* implementing agency for the FRA in most states. The inherent conflict between the goals of the Forest Department and the target population results in extra-statutory consequences – conditional grants of titles, unnecessary requirements imposed in the claim verification process etc.
- 16 Letter as quoted in *The Indian Express* available at: <http://indianexpress.com/article/india/india-others/maharashtra-toes-centres-line-on-forest-rules-for-now>.
- 17 Rule 12 of the MPVFR. Moreover, the final word on approval of the plan rests with the Sub-Divisional Forest Officer.
- 18 Even though it is ‘*responsible for the management of...forest on behalf of the Gram Sabha*’ - Rule 4 of the MPVFR.
- 19 Rule 8 of the MVFR.
- 20 Namely, the District Planning Committee and the Divisional Forest Officer.
- 21 As per Rule 20 of the MVFR, the funds, accounts and audit of the VVS ‘*shall be managed as*

per... the directives of the State Government and funding agency, from time to time'. Rule 21 also provides for the apportionment and utilization of the funds of the VVS 'within the framework as directed by the State Government, from time to time.'

- 22 Rules 2(g) of the MPVFR and 6(1)(a) and 6(3) of the MVFR. A reading of the entire scheme of the rules show that a large part of management powers are retained with the forest department, with the capacity to render the GVS and the VVS little more than spectators to the management process. See, for example, Rules 5 (2), 12(1) of the MPVFR and 7(a) and 8 of the MVFR.
- 23 **8. Sharing of forest produce** – (3) Notwithstanding anything contained in rule 5, Gram Van Samiti with the prior approval of the Government, can enter into an agreement with a company or a body corporate, owned, managed and controlled by the Government or engaged in a manufacturing activity for which any forest produce is a raw material, to share certain forest produce from that village forest as consideration for the investment made by that company or body corporate towards the development of that village forest.
- 24 Proviso to Rule 3(3) of the OVFR.
- 25 To some extent, provided for in the MVFR in the form of VVS and Gram Sabhas for intra-community disputes; Range Forest Committees for inter-community – See Rules 12 and 15(e) of the MVFR.
- 26 Rule 19 of the MVFR.
- 27 **14. Duties of Residents-** It shall be the duty of every resident of the village to:-
 - a) Prevent the commission of any offence which is in contravention of the provision of the act and is being committed in the village forest;
 - b) Help in apprehending and initiating legal action against the person who has committed any offence in the village forest in contravention of the provision of the act;
 - c) To report the forest officer about the offence committed in the village forest and safeguard the forest produce until the forest officer takes charge thereof;
 - d) ...
- 28 Rule 12 further empowers the VVS (or the Range Forest Committee, as the case may be) to consider and resolve disputes relating to 'irregularities in the exercise of forest rights'.





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Photo: Dr. Anish Andheria

Averting Extinction

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By Rizwan Mithawala

A herd of cattle grazes on tiny bamboo shoots and other scant vegetation amid thin stumps of felled trees in the buffer zone of the Bandhavgarh Tiger Reserve in Central India. A dark grey bull wears a collar that encases a GPS device, and wanders not far from the carcass of another bull, killed by a tiger a week ago. The carcass, now drying up, lies within the vicinity of a wire-mesh fence, the other side of which, falls under the ‘core zone’ of the reserve. A few hundred metres ahead, the fence is replaced by a one-metre-high loose stone wall, over which a wild pig jumps to graze in an almost-parched paddy field. In the grazing area of another ‘buffer zone’ village, a thin stream meanders through a lush meadow. Water and grass are the lifeblood of all herbivores – domestic and wild. Heaps of cattle dung are seen alongside sambar deer pellets.



When villages with high densities of livestock surround forests that harbour wild herbivores, the risk of disease

transmission increases manifold. Photo: Dr. Anish Andheria

Wildlife veterinarians concerned with trans-species spread of disease dread scenes like these, and call this kind of proximity 'spatial overlap', which leads to inter-species pathogen transmission and the spread of diseases like the foot-and-mouth disease (FMD), rabies, anthrax, brucellosis and bovine tuberculosis, which are 'reciprocally transmissible' between cattle and wild herbivores.

Grazing areas and sources of water become hotbeds of disease transmission; and when villages with high densities of cattle surround forests that harbour wild herbivores, the risk increases manifold. "Bandhavgarh is surrounded by around 130 villages," informs Dr. Nitin Gupta, veterinary officer at the reserve, "And out of those, 10 villages are in the core zone. The livestock population of just these 10 villages is estimated at around 8,000. This is not a small number." Speaking of the reserve's porous boundaries, he explains how the interface between the wild and the domestic cannot be controlled. "Wild animals sometimes venture into village lands, and domestic animals enter the forest. Water and food resources are shared at many locations; and domestic animals are prone to many diseases, especially FMD, so the risk of transmission always looms large."



The gaur is an important prey species for the tiger. Decline in gaur populations can eventually lead to an increase in livestock predation by tigers, and bring them uncomfortably close to humans. Photo: Dr. Anish Andheria

To assess the risk of such disease transmission, it is essential to assess the prevalence of infectious diseases in cattle populations that come in contact with wild herbivores. The National Wildlife Action Plan (2017-31) highlights the need to maintain surveillance for both endemic and emerging diseases, and counter the potential spread of zoonotic diseases by way of interactions between wild animals, humans and domestic animals.



Dr. Himanshi Joshi restrains a cow for collection of blood samples. Photo: Dr. Vinay Pandey

“We are developing a comprehensive disease surveillance model that will not merely indicate the prevalence of infectious diseases, but also identify the routes of transmission,” says Dr. Himanshu Joshi, wildlife veterinarian in-charge of the project with the Wildlife Conservation Trust (WCT). To assess the ‘infection load’ and spread of diseases, Dr. Joshi and his team conduct periodic surveys to estimate cattle populations, collect blood samples from cattle and wild herbivores (during post-mortems of animals that die due to natural causes or road accidents), and get the samples analysed for prevalence of diseases. These efforts are aimed at creating a baseline on the prevalence of FMD in the region, investigating the cause of mortalities of wild herbivores, and finding ways to reduce the interface between wild and domestic animals. The project is being executed in collaboration with the Madhya Pradesh Forest Department, the Animal Husbandry Department, and the Project Directorate on Foot and Mouth Disease. This will eventually result in developing standard operating procedures to monitor, diagnose, treat and contain diseases before they metamorphose into epidemics.



A domestic bull wearing a GPS device around its neck. Photo: Dr. Anish Andheria

Collaring cattle with GPS devices is part of the effort to understand the extent of interactions between livestock and wild herbivores in the buffer zone, and identify the routes and mediums of transmission. Among the wild herbivores of Bandhavgarh, the species most vulnerable to disease is the gaur. Some individuals from the population have been radio-collared by the M.P. Forest Department in collaboration with the Wildlife Institute of India (WII). “Data on gaur movement can be overlaid on the GPS tracks of cattle to help understand spatial overlap and disease transmission probability,” explains Dr. Joshi.



Local villagers, trained by WCT's wildlife veterinarians are employed as field assistants, and are seen here collecting a blood sample. Photo: Rizwan Mithawala

The current gaur population in Bandhavgarh are the progeny of 50 individuals that were brought here in 2011-12 from the Kanha Tiger Reserve, after the species went extinct from Bandhavgarh around 1998. The reintroduction report published in 2011 attributes 'disease or accident' as the cause of the 'almost sudden' disappearance of the species from the reserve. Experts believe that gaur are more prone to infectious diseases due to their genetic similarity to cattle. Past records also indicate that gaur populations have succumbed to epidemics of FMD, rinderpest and anthrax.

LIVESTOCK IS A REFLECTION OF THE WILD

"Etiological agents (bacteria, viruses, fungi, parasites, and the like) don't fuss over whether the host is wild or domestic; so, the health of livestock is a reflection of the health of the wild," explains Dr. Joshi. "We cannot mass-vaccinate wild animals," adds Dr. Gupta. However, sampling cattle for diseases comes with its own set of challenges, the biggest of which are misconceptions of animal owners about medical procedures performed on their animals, and the lack of trust between communities and the agencies involved.

"Jitna vishwaas aap devi devta par karte ho, utna vishwaas aapko vigyaan par bhi karna padega," (You should place as much trust in science as you do in religion), says Dr. Vinay Pandey in a persuasive tone. He makes this appeal several times in a day during the sampling season. Also a wildlife veterinarian with WCT, Dr. Pandey doubles up as a myth-buster. For Dr. Joshi and Dr. Pandey, work starts in the wee hours (as animals are let out early for grazing) in the sampling season. But they often face rejection and indifference from cattle owners. "They have been victims of veterinary quackery in the past, and have lost animals to diseases that were curable", informs Dr. Pandey. "Also, there have been some natural deaths post vaccinations. These were just coincidences, but cattle owners attributed the deaths to vaccinations, and they now fear the needle and syringe, even if used only to collect 5 milliliters of blood. It's a challenge, but we are trying to restore their faith in medicine." A majority of livestock found around Bandhavgarh appear weak, and are unproductive. "Awareness about animal health is a slow process. We are getting them interested in artificial insemination so

that the productivity, especially milk production, can be enhanced,” says Dr. M.K. Dwivedi, Veterinary Extension Officer with the Madhya Pradesh Animal Husbandry Department.



Dr. Vinay Pandey medicates an infected animal after collecting blood samples. Photo: Rizwan Mithawala

On almost all the cattle grazing around the forests of Bandhavgarh, one can count all the ribs and the protruding pelvic bones. It reflects the bigger picture of the majority of India’s free-range cattle – weak, unproductive, and disease-prone. With the lack or non-existence of grasslands, unavailability of quality fodder, and poor livestock management practices, these animals exert immense pressure on forests, and compete with wild herbivores for resources. But the direst threat is of disease spillover. “It builds up silently, like an undercurrent; and when it comes to the fore, entire herds get wiped out. In past events of local extinctions, especially of gaur from Bandhavgarh, there are lessons for us,” sums up Dr. Joshi.

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Situating Law: Adivasi Rights and the Political Economy of Environment and Development in India¹

Ajit Menon

Published in Christoph Eberhard (dir.), *Law, Land Use and the Environment. Afro-Indian Dialogues*, Pondichery, Institut Français de Pondichéry, 2007, 549 p (363-387)

Résumé : Situer le droit : les droits des adivasi et l'économie politique de l'environnement et du développement en Inde.

Cet article explore la manière dont le droit, et plus particulièrement une législation sociale et protectrice, est élaboré en Inde. Il s'interroge sur son efficacité (ou inefficacité) dans la pratique à travers le prisme des droits qui ont été attribués aux *adivasi*, ou « tribaux » par le *Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill* de 2006. La contribution retrace la généalogie des droits des *adivasi* dans la période post-coloniale. Il insiste sur la dimension diachronique du processus de reconnaissance de droits et examine la manière dont elle s'est insérée dans le contexte plus large des droits sociaux et environnementaux.

La thèse principale de l'argumentation est qu'un examen minutieux de l'intersection de la loi et des droits illustre que d'une façon générale ces droits ont été façonnés par les priorités du « développement » et de « l'environnement ». L'article met en lumière les mille et une façons dont les droits des adivasi ont été *de facto* limités ou mis en danger dans le droit constitutionnel, la loi ou la jurisprudence (*constitutional, statutory and case law*). Principalement on peut souligner que l'ineffectivité du droit, incluant les trois catégories susnommées, peut résulter de sa non-application pure et simple, de ses ambiguïtés ou d'assouplissements menant à le vider de son essence. Pour les comprendre, il faut aborder ces limites selon deux axes. D'une part, il est important d'analyser la hiérarchisation des droits selon des préoccupations sociales ou environnementales. D'autre part, il faut explorer les effets sur les droits du discours hégémonique du développement et des tensions qui existent entre le Centre et les états fédéraux dans l'élaboration et la mise en œuvre des lois. On ne peut nier l'existence d'espaces juridiques à travers lesquels les activistes doivent continuer à avancer l'agenda de la reconnaissance de droits. L'article souligne néanmoins les limites du droit dans le contexte politique actuel qui est orienté avant tout vers le développement.

De l'analyse émergent aussi des enseignements critiques sur la manière d'aborder le droit comme phénomène social et sur le risque qu'il encourt d'essentialiser « la communauté ». Une littérature relativement importante soutient que le droit est un domaine contesté. C'est le produit d'agendas sociaux en compétition. Cet article suggère cependant que dans le domaine du droit certaines préoccupations hégémoniques sont privilégiées par rapport à d'autres dans le projet englobant de développement. Ce sont les préoccupations, du développement et de l'environnement tels qu'ils sont envisagés par la modernité dominante (*mainstream modernity*) qui prennent le dessus sur les droits culturels des *adivasi*. Si la lutte pour la reconnaissance des droits coutumiers demeure un agenda important, elle doit non seulement reconnaître les revendications de ceux au-delà de la « communauté », mais elle doit aussi reconnaître que la lutte pour les droits doit s'inscrire dans une lutte plus large qui affronte l'idée même de développement.

INTRODUCTION

The recent controversial debates and eventual passing of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006 (hereafter the STB),² which was originally aimed at

¹ An earlier version of this paper was also presented (*in absentia*) at the Ninth Sustainable Development Conference 'Missing Links in Sustainable Development: South Asian Perspectives' held at the Sustainable Development Policy Institute, Islamabad, Pakistan on 13-15 December. I would like to thank C. R. Bijoy for his constant support and encouragement in drafting this paper.

² The original draft bill did not include other traditional forest-dwelling communities.

providing *adivasi*³ people rights to forest land already occupied by them and access to forest produce for livelihood purposes, not only highlights the struggles that surround the passing of protective social legislation but, equally importantly, the vagaries of law as a possible instrument through which meaningful social change (that recognizes *adivasi* ‘customary’ claims to land) can be initiated. Although the passing of the bill is no doubt a victory of sorts for activists and *adivasi* communities, last minute amendments to the recommendations made by the Joint Parliamentary Committee (JPC),⁴ which potentially exclude a number of beneficiaries and bestow significant powers on the bureaucracy, are indicative of the manner in which the rights discourse has been limited by the wider hegemony of mainstream development and environmental thinking.

This is nothing new. In fact, a careful examination of the manner in which law and rights intersect illustrates that rights have more often than not been mediated by other priorities (including environmental concerns) of the developmental state – priorities that have a temporal dimension to them. I try, in this paper, to highlight the multiple ways in which *adivasi* rights have been limited or undermined – with the context of the STB as a reference point. First, I try to detail how law is ostensibly envisaged by the state as a means by which to address *adivasi* rights and concerns of social justice. Second, I suggest that such rights discourses must be analysed, keeping in mind the fact that law has had multiple other purposes, both in the colonial state’s project of revenue generation and in the post-colonial state’s project of development. Third, I attempt to assess the claim that ‘legal spaces’ remain available despite the apparent limits to law. I try to do all of this in the context of situating law. It has become common among many legal scholars to understand law in terms of social processes – to see statutory law as the outcome of negotiation/contestation (see Pathak 1994a for a detailed discussion). While I partly endorse this view, my focus here is on the structural determinants of law that emerge from hegemonic discourses and practices of development. I distinguish between processes related to the ‘making of law’ and the ‘working of law’, illustrating how both in different ways are embedded in the wider political economy. The arguments put forward are largely based on a *re-reading* of existing laws and legal decisions as well as on analyses of environmental law that address social rights in particular, with a view to opening up a more broad-based dialogue between legal scholars and social scientists pertaining to the socio-economic and political dimensions of law.

Conceptualizing Law, the Environment and Rights

A considerable literature has emerged over the last ten years or so in the Indian context exploring the potential of law to address social concerns (in particular rights) pertaining to the environment. At the heart of this debate has been the issue of whether or not law is autonomous (Pathak 1994a: 1975). Autonomous not in a positivist sense, in which legal systems are considered to be independent and to function with their own rules and norms (ibid. 1974), but autonomous in the sense that law can be considered a contested domain that can be shaped by different social forces. Views differ significantly, with some scholars having more faith in the law and its creative potential (V. Upadhyay 2001) and others seeing this potential, if any, very much linked to (or defined by) the manner in which the ‘environment’ becomes part of capitalism’s project of accumulation (Bushan 2004; Pathak 1994, 1994a).

Both these positions speak some truth. In terms of the making of law, that the law can address rights concerns is borne out by the fact that there are legal provisions – both in the Constitution and in statutory law – that are aimed at protecting the rights of marginalized communities. However, at the same time, one knows that these rights are often not protected in practice, that there are significant silences and limitations to these laws and that more often than not they are mediated by other concerns that often conflict with the implementation of rights. Pathak (1994a: 3139) argues that it is the fractures and the divisions within the state itself that allow for the simultaneous protection of rights and their undermining. The state, he argues, is not a monolithic entity.

³ The term *adivasi*, or literally original inhabitants, is used instead of tribals as most scheduled tribe communities now refer to themselves as *adivasis*. However, use is also made of scheduled tribes and tribals to refer to the official administrative category of the state (scheduled tribes) and the day-to-day language of the state (tribals).

⁴ Objections to the bill come mostly from conservationists, who fear that giving *adivasi* households rights to forest land could result in the destruction of both forests and wildlife (Karanth and Bhargav 2005, Madhusudan 2005, Rangarajan 2005).

While Pathak's main focus is on how the environment (and therefore to some extent social rights) might at given points in time be privileged by the state because of the importance of the environment to the 'sustainability' of capitalist development, I am more interested in unpacking how rights are protected or denied as a result of the privileging (if one can call it that) of the environment. In other words, the privileging of the environment can have both beneficial and adverse effects on the rights of marginalized communities. It is necessary, therefore, to see when the environment is privileged (and when it is not), in what form it is privileged and what the implications of this are for rights.

Doing so requires a more nuanced look at law, even if one sees law as a social process. First, it requires distinguishing between the making of law and the working of law. 'Good' laws are not necessarily implemented, nor are all laws that are made good. To understand both the making and working of law, it is necessary to examine the wider policy (and development) context in which laws are situated. Second, it requires distinguishing between statutory law and case law and thinking about how both might differ in terms of their impact on marginalized communities. This is important when discussing the availability or not of legal spaces. Third, the temporal dimension should not be ignored. Law is very much tied to the manner in which development is articulated *at a given point in time*.

Addressing these concerns will add to the existing analyses of law, the environment and rights of the marginalized. It will provide more clarity as to whether or not there is a hierarchy of rights, what form this hierarchy takes and the extent to which law can be dynamic enough to remain an important instrument through which to address the rights of adivasi communities. Concerns around the autonomy of law and the agency of actors should, in other words, be examined side by side with the structural constraints of development that at least partly affect the autonomy and agency of particular actors.⁵

Law and Social Change

Law has been an important instrument through which the state has addressed social welfare concerns, or at least stated its intentions related to adivasis and *adivasi* rights. While Nehru's five principles provided a vision of respecting the 'uniqueness' of *adivasi* communities and their customary claims to land, law (and policy) has been a critical means to act on this vision. Article 342 of the Constitution, by providing the President the power to notify communities as scheduled tribes, implicitly recognizes the fact that scheduled tribe communities are the ones that have suffered some of the worst types of deprivation. Under Article 46 of the Directive Principles of State Policy, the state is obliged to promote the educational and economic interests of the weaker sections, especially those of the scheduled castes and scheduled tribes. In addition, Article 14 speaks about the right to equality and Article 15 prohibits discrimination due to religion, caste, sex, etc. Article 13 prevents the state from making laws that deny people their fundamental rights. Scheduled tribes are also guaranteed various forms of reservation in Articles 320, 332 and 334 of the Constitution (Bijoy 1999: 1332, Mohanty 2001: 3857).

The most significant article in the Constitution respective of adivasi rights is Article 244, for it states that the provisions of the Fifth Schedule and Sixth Schedule shall apply to the administration and control of scheduled areas and scheduled tribes, both in the country as a whole (states other than the northeast) and the northeast. The logic of Article 244, in the spirit of Nehru's five principles, is that for the traditions and culture of scheduled tribe communities to be respected, scheduled areas should function autonomously. The Fifth Schedule allows the President to declare areas as scheduled and the Governor the power by public notification to not apply acts of Parliament or to modify them in accordance with the needs of scheduled tribe communities. Of equal importance, the Fifth Schedule permits the Governor (on the advice of the Tribal Advisory Council) to prohibit the transfer of land by or among scheduled tribes, as well as to regulate the allotment of land to non-scheduled tribes and the working of moneylenders (Bijoy 2000).

A number of other legal and policy measures have been taken to protect *adivasi* communities. Foremost has been the enactment of various land legislations, either in the form of specific tribal land alienation acts, land revenue codes or land reform acts that prevent the alienation of land to non-adivasis. These acts have their roots in the colonial period, with the Bombay Province Land Revenue Code, 1879, being the first legislation to prohibit transfer of land from tribals to non-tribals. Some of the many

⁵ The political strength of particular actors determines the extent to which structural constraints limit their agency.

legislations prohibiting transfer of tribal land to non-tribals in the pre- and post-independence period include the Chhotanagpur Tenancy Act, 1908, the Santhal Pargana Tenancy (Supplementary Provisions) Act, 1949, the Bihar Scheduled Areas Regulations, 1969, the Andhra Pradesh Scheduled Areas Land Transfer Regulation, 1959 (and amendment in 1970), and the Maharashtra Land Revenue Code and Tenancy Laws (Amendment) Act, 1974 (Bijoy 1999: 1331).

In 1954, moreover, a separate tribal development policy was drawn up, which established multi-purpose tribal development blocks in a few select blocks of the country. During the Fifth Five-Year Plan, the Ministry of Home Affairs, Government of India, initiated the Integrated Area Development Programme (IADP) in scheduled tribe areas (not necessarily Fifth Schedule areas). This resulted in the formation of a Tribal Sub-Plan (TSP) approach, an initiative aimed at taking a comprehensive and holistic view of scheduled tribe problems. The vision set forth was that scheduled areas and other areas with a scheduled tribe majority should be governed so as to privilege the specific needs of scheduled tribe communities (Menon 2000: 86).

It was, however, only in 1996, with the passing of the Panchayat (Extension to Scheduled Areas) Act (PESA), that *adivasi* communities were given substantive powers with regard to natural resource management that would potentially enable them to realize some of the legal rights envisaged in Nehru's five principles. Although a separate tribal development policy and the establishment of tribal development blocks were ostensibly meant to address the specific needs of scheduled tribe communities, in actuality these structures more often than not were simply bureaucratic impositions of the developmental state. The PESA, on the other hand, constitutionally gives significant governance powers directly to *adivasi* institutions. According to the PESA, *gram sabhas*⁶ are empowered to preserve their cultural identity, their community resources, their modes of dispute resolution and, equally importantly, the right to approve government plans, programmes and projects within their jurisdiction (Mukul 1997: 929). Moreover, the *gram sabhas* or the *panchayats* at the appropriate level have to be consulted before the acquisition of land for development in scheduled areas. Finally, these local bodies have been given ownership rights over minor forest produce, as well as the power to give recommendations with regard to the granting of mining concessions.

The STB, therefore, is the latest in a line of legal/policy initiatives to address *adivasi* rights. The basic premises of the STB are that scheduled tribes (and other traditional forest dwellers) have inhabited the forests for centuries, that their rights have not been recognized and hence that there is a need to rectify this historical injustice. The draft bill vests thirteen forest rights with traditional forest dwellers, including rights to hold, live and cultivate forest land, rights to minor forest produce, rights to biodiversity, rights to protect, regenerate or conserve community forest resources and any other traditional rights (Section 3). Implicit in the bill is also the assumption that giving such rights would improve the overall management of forest areas (GoI 2006a). In the penultimate section, I return to the STB and attempt to locate it in the analysis put forward in the following sections.

Law, Territoriality and Development

The potential of law to address *adivasi* rights has always been linked to or affected by law as a means of territorialization. As Vandergeest and Peluso (1995: 386) have highlighted, 'all modern states divide their territories into complex and overlapping political and economic zones, rearrange people and resources within these units, and create regulations delineating how and by whom these zones can be used'. In India, during the colonial period, elaborate processes of enumeration (census) were invariably followed by the establishment of different revenue regimes aimed at collecting tax. Simultaneously, territory was demarcated into state and private lands, both in the context of revenue and forest land. Although the nature and shape of revenue and forest settlement varied significantly across the geographical landscape, were influenced by local factors and were often contested through agrarian (*adivasi*) struggles (Bijoy 2000), settlement (forest and revenue) introduced new forms of property relations that impacted on the socio-economic and cultural space of *adivasis* (Pathak 2002). Rights were increasingly marginalized or were reinvented as concessions or privileges.

⁶ A *gram sabha* is a village assembly.

The post-colonial state both fine-tuned the process of revenue and forest settlement and introduced new legislations that increased its territorial reach and control over land. The Indian Forest Act, 1927, remained largely in place (with amendments of course). In addition to forest legislation, the Wildlife Protection Act, 1972, set aside more land for the state to manage, this time in the name of protecting fauna. Much of this expansion again occurred in areas that had large *adivasi* populations. The Land Acquisition Act, 1894, has been the state's ultimate weapon for asserting its eminent domain. To add fuel to the fire, *adivasi* rights to land have been hampered by an absence of title over land, benami transactions and contestations over land they claim as theirs. This was due, at least partly, to the non-implementation of existing legislation or because existing protective legislation was repealed (Bijoy 1999).

This apparent conflict between protecting the rights of the *adivasis* and colonizing much of the land on which they depend can be understood better if tribal development is located in the context of development and modernity. While Nehru might have been cognizant of the need to not impose development on *adivasi* communities, he himself spoke about the need to bring the fruits of development to tribal communities. The developmental bureaucracy, like its colonial predecessor, has in practice not even recognized this 'cultural' uniqueness. Tribal development, from the very beginning, has been immersed in the language of modernizing and civilizing. The roots of this, as Sengupta (1988) has observed, were in the colonial period and again linked to processes of territorialization and revenue collection. Tribal areas were either considered the 'heart of darkness', 'diseased' or 'not accessible' and were therefore treated differently administratively. This portrayal of tribals continued in the post-independence period, when tribals were constructed as backward by nature and in need of development. A closer look at tribal development policy highlights the fact that it has been aimed primarily at bringing the fruits of development to tribal areas. From the outset, therefore, tribal development has been beset by a contradiction – the desire to respect the cultural diversity of *adivasi* communities as opposed to the need to mainstream and assimilate them – the latter taking precedence.

Moreover, tribal development was never meant to detract from the wider compulsions of post-colonial development. Nehru envisaged an industrial and modernised India. Large dams were the temples of modernity and were central to this path of development (Singh 1997). Many of these dams are located in *adivasi*-dominated areas. So, too, the case of mines and mineral exploitation. The Land Acquisition Act, 1894, is an instrument that has been used frequently to make land available for developmental projects. While international human rights law focuses both on appropriate procedural protection *and* due process, the Land Acquisition Act, 1894, simply guarantees that the procedures of law are followed, and not necessarily the due process of law. What this means is that the greater common good, however defined, can always be a reason for displacement.⁷

There is also a case to be made that the more recent discourses/ practices of liberalization and 'environmentalism' have either put *adivasi* rights on the backburner or/and contributed to the further marginalization of *adivasi* lands. A number of worrisome developments have occurred to suggest this. There is the case of land reform regulations being watered down to spur on corporate investment that dates back at least to the early 1990s. Nair (1996) has highlighted this in the context of Karnataka. In Tamil Nadu, a number of efforts have been made to give common lands to corporate bodies to invest in the environment through plantations (Pandian 1996). More recently, on May 17, 2005, the government of Gujarat passed a G.O. aimed at bringing wastelands under the control of corporate houses and big farmers – which is likely to have a major impact on nomadic pastoralists and *adivasi* households (Bharwada and Mahajan 2006). Recent high-profile events in Plachimada (Bijoy 2006) and Kalinga Nagar (Padhi and Adve 2006) are examples of how the wheels of development keep turning, despite protective legislation. In the case of Plachimada, the decision to ban Coca Cola was taken by the government and not by the judiciary, i.e., it was not a case of pro-active judicial intervention.

What the above discussion highlights in a nutshell is the tenuous ground on which *adivasi* rights have always been situated. A clear dualism exists and operates. On the one hand, the Constitution and other legislations (with limitations of course) aim to address the rights of scheduled tribes. On the other hand, other statutory law and prerogatives of development often challenge and negate these rights. Further, this

⁷ The Land Acquisition Act, 1894, by giving the state the power to usurp land for developmental purposes, does not recognize the rights of those communities that own this land. In that sense, the procedures embedded in the Land Acquisition Act, 1894, do not ensure appropriate procedural protection.

dualism has resulted not only in a marginalization of the rights discourse, but also in a significant recasting of it when it is part of policy. For example, rights, in programmes such as joint forest management, are more often than not envisaged as a means to involve communities in the management of resources (Menon 2006: 191). While managerial responsibilities could be an added benefit, rights should be fundamental as opposed to instrumental. Instrumental rights ignore the cultural dimension of rights. Are urban residents promised water only if they utilize it sustainably?

The poor performance of upholding *adivasi* rights is therefore to be seen in terms of basic living standards. *Adivasi* communities have suffered more than any others in the name of the 'greater common good'. According to the recent Draft National Policy on Tribals, 55.15 per cent of the total of displaced persons have been *adivasis*, approximately 10 million people (GoI 2006). Poverty data suggest that a much higher percentage of scheduled tribe households is below the poverty line than in other communities (barring Dalits). For example, in states such as Orissa, Madhya Pradesh and Maharashtra, where *adivasis* constitute a significant percentage of the population, the headcount ratios for scheduled tribe households are 61.2 per cent, 26.1 per cent and 33.3 per cent respectively, and for the whole population 37.5 per cent, 15.3 and 25.1 per cent respectively (Meenakshi *et al.* 2000: 2750). The high poverty rates among *adivasis* are at least partly due to insecurity of land tenure and the usurpation of land by private interests and the state. In the case of state-induced displacement, resettlement and rehabilitation have at best been poorly undertaken. Legitimate questions can therefore be asked as to what impact protective legislation and policy have had on the welfare of scheduled tribes.

'Legal Spaces'?

Thus far, I have tried to illustrate that the discourse and practice of *adivasi* rights in the post-independence period has been limited by continued processes of territorialization and the state's 'bigger' priorities of development and modernization. This notwithstanding, V. Upadhyay (2001: 2131) has argued that there is a creative potential in the use of law (both statutory and constitutional) because of the 'open-ended and general' nature of law. V. Upadhyay makes this point by highlighting how Article 21 of the Constitution (the right to life) has been used liberally by lawyers, how judges have upheld claims based on this line of argument, and by suggesting that specific policies and acts such as the National Forest Policy, 1988, and the Indian Forest Act, 1927, provide enough room for liberal interpretation, which can result in the protection of forest dwellers' rights. Moreover, he argues that the judiciary by and large has tried to reconcile different and often contradictory interests.

In this section, I re-look at V. Upadhyay's contentions more systematically. There is no denying at one level, as I too have suggested, that there have been legal provisions that articulate the interests of *adivasis*. There is also no denying that such rights have been upheld by the courts on a number of occasions. Hence, in addition to the constitutional and statutory provisions alluded to above, one can refer to a number of landmark judgements pertaining to *adivasi* rights to forest resources, restoration of lands and the prevention of land alienation. For example, in the case of *Fatesang Gimba Vasava v. State of Gujarat* (AIR 1987 Guj 9), the Gujarat High Court ruled that the Forest Department's action to prevent the transport of bamboo for sale to *adivasis* at concessional rates was unwarranted. The court ruled that, once bamboo had been converted to bamboo chips, it did not constitute a produce from nature and hence was not a violation of the Indian Forest Act, 1927 (Leelakrishnan 2005: 20-21). In both *Sri Manchegowda v. State of Karnataka* (AIR 1984 SC 1151) and *Lingappa Pochanna v. State of Maharashtra* (AIR 1985 SC 389), the Supreme Court ruled in favour of the protection of *adivasi* lands: in the former case, nullifying private purchases of *adivasi* land and, in the latter, allowing the state to enact legislation aimed at restoration of lands to *adivasis* (ibid.: 22). The most high-profile case is no doubt *Samatha v. State of Andhra Pradesh* (AIR 1997 SC 3297). In a prior case (*P. Rami Reddy v. State of Andhra Pradesh*) (AIR 1998 SC 1626), the Supreme Court had ruled that prohibitions against transfer of *adivasi* land to persons who were not *adivasis* was necessary, given the poor economic status of *adivasis*. The Supreme Court in the *Samatha* case went further by saying that 'persons' included the constitutional government, i.e., land alienation to the state was to be prohibited (V. Upadhyay 2001: 2131).

To suggest, however, that the presence of protective legislation and landmark judgements are adequate legal space to uphold *adivasi* rights would give only a partial picture. A number of more nuanced points need

to be made. First of all, with regard to statutory law, it is necessary to distinguish between good legal provisions and bad ones, and the manner in which different legal measures often overlap and contradict each other. For example, do forest laws that deny *adivasis* access to forests not contradict Article 46 of the Constitution, which speaks about the need to promote the educational and economic interests of weaker sections? Constitutional provisions often appear to have little practical value in terms of the everyday functioning of law. Similarly, while the National Forest Policy, 1988, for the first time upheld the interests of forest-dependent communities, the Indian Forest Act, 1927, prevents this policy from being upheld in spirit by often denying forest dwellers rights to forests. Even initiatives such as the JFM, which some argue are a step in the right direction, have no legal backing in the Indian Forest Act, 1927. Second, even ‘good’ laws are often not operationalized. Take for example the PESA. Although the PESA was passed in 1996, in most states it has not been operationalized into rules and, when it has, it has often been watered down.⁸ In the particular case of the PESA, it points to a legal quandary of sorts, given the state’s (not the centre’s) jurisdiction in terms of framing laws related to *panchayati raj*. As *adivasi* areas are rich in minerals, the states have been reluctant to empower *gram sabhas* too much, as they would likely prohibit unchecked exploitation of forest land. Third, these good laws often have ambiguities that not only constrain their effectiveness, but which could undermine their potential if implemented. Again the PESA is a case in point. In the PESA, it is stated that the *gram sabha* should be consulted prior to the acquisition of land. But what does consulted imply? Does it imply that the approval of the *gram sabha* is needed? (S. Upadhyay 2004) Fourth, even case law decisions are often not upheld in other contexts, or are challenged by the state itself. Not only has the Samata judgement been restricted to Andhra Pradesh (Regulation 1/70), but the state has attempted to amend the Fifth Schedule to promote mining through the Andhra Pradesh Mining Development Corporation.⁹ Finally, decisions emerging from judicial intervention, i.e., case law, have their own limits. These decisions can only be applied post-facto (if at all). Moreover, it is often not possible for *adivasis* to take the legal route to protect their rights due to the costs (both financial and other) involved.

The hierarchy of rights within case law also requires more attention. While *adivasi* rights have at times been protected, at other times they have not been upheld, or have been qualified or even ridden roughshod over. To understand why this has been the case requires a more thorough look at a wider gamut of environmental cases in an attempt to categorize them. A tentative attempt to do so has resulted in the following conclusions. First, the courts have tended to uphold *adivasi* rights more when there are no major developmental or environmental prerogatives that conflict with rights. The above-mentioned case of *Fatesang Gimba Vasava v. State of Gujarat* is a case in point. Although the Samata judgement might contradict this claim in principle, the challenge to that ruling by state agencies noted above highlights once again the importance of other developmental priorities. Second, when there are developmental or environmental priorities, the courts have tended to limit the rights of *adivasis*, to speak of alternative packages of rights or compensation. For example, in *Animal Rights and Legal Defence Fund v. Union of India* (AIR 1997 SC 1071), the Supreme Court had to intervene to resolve a dispute between Madhya Pradesh and Maharashtra. Madhya Pradesh had allowed *adivasis* fishing permits in the Totladoh reservoir of the Pench National Park. Maharashtra objected, saying that this could lead to the felling of trees, disturbance to water and migratory birds, etc. While the court emphasized the need to address the rights of *adivasis* (in terms of rights to fishing) and to ensure their rights to livelihood after resettlement (when resettlement took place), it also emphasized the need for stricter vigilance in terms of execution of fishing rights and placed restrictions on the extent of fishing permitted (Leelakrishnan 2005: 24). In the case of *Banwasi Seva Ashram v. State of Uttar Pradesh* (AIR 1987 SC 374), the National Thermal Power Corporation (NTPC) required forest land for an electricity-generating scheme. When this was challenged by the NGO Banwasi Seva Ashram, the courts articulated the need for the NTPC to render resettlement and subsistence allowances to displaced *adivasis*, but they justified the need for the NTPC’s electricity-generating schemes in the name of development (ibid.: 190-91).

⁸ This has happened in a number of ways: (1) there have been some critical omissions with regard to the fundamental principles (or spirit) of the PESA; (2) powers have been taken away from the *gram sabha* and given to ‘other appropriate levels of *panchayats*’, (3) rules have not been framed to operationalise acts and (4), where rules have come into play, they too remain legally ambiguous (S. Upadhyay 2004: 3).

⁹ According to critics of the Samata judgement, the judgement allows the APMDC to hold forest land. I would like to thank Samata and P. Sivaramakrishna for their help with regard to understanding the Samata judgement.

Third, a distinction should be drawn between environmental protection cases and developmental cases, the former referring to environmental conservation (of, for example, ecologically important landscapes) or environmental pollution (industrial or vehicular pollution), and the latter to large infrastructure projects. V. Upadhyay (2000: 3790) himself has highlighted that the courts have tended to take a more pro-active position in environmental conservation cases than in developmental cases (thereby weakening his own case that the law is open-ended). For example, in the frequently cited Doon Valley case (*Rural Litigation and Entitlement Kendra and others v. State of UP and others* (AIR 1988 SC 2187)), the Supreme Court was pro-active in appointing a number of committees to study the impact of mining on the ecology, and actually phased out mining in the region (Leelakrishnan 2005: 13). In the M.C. Mehta cases pertaining to pollution, the courts imposed a number of restrictions on industry despite the negative employment consequences of these restrictions (ibid.: 196-97). Although both types of cases could therefore have a negative impact socially, the difference is that in developmental cases the negative environmental impacts are often ignored. Also in environmental pollution cases, some people's rights are actually protected - for example urban residents who benefit from better air quality. An argument could be made, therefore, that the environment assumes more importance vis-à-vis other concerns when the environment is part of the middle-class imagination, i.e. clean and unpolluted cities, unspoilt national parks, etc. On the other hand, large infrastructure projects such as dams are rarely stopped in the name of the environment (or social rights) alone – witness both the Narmada and Tehri cases.

A number of other points are in order here. It appears that the courts have tended to problematize concerns around development and environment very much within currently hegemonic discourses of development and modernity. Development continues to be envisaged in terms of Nehruvian notions of modernity, although perhaps using different strategies to get there, i.e., a greater role for the market. Hence, the courts have tended to be reluctant to swim against the tide of big development projects. This is not because the courts are not aware of the environmental and social consequences of these projects, but rather because they are resigned to the fact that they are necessary for development. When it comes to socio-economic concerns, the courts focus more on resettlement and rehabilitation aimed at minimizing the negative social consequences of development. Second, when objections are made to particular developmental projects on environmental grounds, the courts have at times circumvented these objections by arguing that a particular project had already been cleared on environmental grounds. It is worth referring to the *Dahanu Taluka Environment Protection Group v. Bombay Suburban Electric Supply Ltd. Case* (1991 A SCALE 472). Here, the Supreme Court ignored the report of the Environmental Appraisal Committee, which highlighted the ecologically fragile area in which the power project was located, arguing that the Centre had made use of a state expert committee report that had okayed the project (V. Upadhyay 2000: 3790).¹⁰ Third, the courts have increasingly chosen to resort to the separation of powers doctrine (in different ways) to justify their status quoist position. John (2001: 3032) has argued that this is even more the case when socio-economic rights are at stake. Fourth, the reason the courts have been more pro-active in environmental pollution cases is most likely because they see the possibility of technical fixes that do not prevent the process of development itself from moving forward, e.g., common effluent treatment plants for tanneries. These occurrences do not bode well for the potential of law as an instrument for upholding the rights of the marginalized. Infrastructure projects are more likely to affect marginalized communities such as *adivasis*.

The marginalization of *adivasi* rights is today very much part of a wider marginalization of rights in general. Bhushan (2004) has argued that the biases of the court are more generally linked to the wider neo-liberal agenda, which privileges the advent of private capital and the creation of an investor-friendly climate. Bhushan cites the case of the *Balco Employees Union v. Union of India* (2002 Vol. 2 SCC 343), in which the employees questioned the government's decision to disinvest. The Court chose not to interfere. The same scenario emerged in the case of *CITU v. State of Maharashtra*. Here, CITU challenged the state government's decision to disinvest based on a number of procedural and financial concerns it had (see Bhushan 2004: 1771-72 for more details on both these cases), but again the Court chose to invoke the separation of powers doctrine. It would be too simple, of course, to argue that courts act in a conspiratorial manner – as there are often dissenting voices in particular judgements. Nonetheless, what many of the above-mentioned cases indicate is a possible trend that calls for caution. Moreover, another noticeable trend

¹⁰ Judgements no doubt will be influenced by a number of factors ranging from individual assessments by particular judges to the relative strength of particular actors involved in the case and perhaps even to public opinion. However, what the above analysis suggests are noticeable trends in terms of judgements.

involves the courts becoming more strict with regard to the application of *locus standi*. In the Balco case, for example, the court ruled that public interest litigation was not a panacea for all wrongs and, more importantly, that it should be an instrument only for those who are directly affected by potential adverse consequences of development interventions (ibid.: 1771).

Finally, a distinction needs to be made between legal spaces in terms of case law and statutory law. It is the everyday forms of law (statutory) that affect communities more directly and on a daily basis, e.g., forest law imposing restrictions on the gathering of fuel wood and other forest produce. Thus, however much the judiciary adopts an interventionist approach, it is unlikely to prevent either the day-to-day enforcement of 'unjust' laws or the violations of law that protect *adivasi* rights. In that sense, the open-endedness of law in general is no substitute for good sectoral laws. The forest sector is a case in point, where even well-intended initiatives in support of community-based forest management have found no mention in law.

Clearly, blaming the law and its inadequacies for all problems is not the right approach. Political and social movements will continue to fight for better laws and try to ensure that the state upholds them. Nonetheless, the limits to law, be it in the form of people-unfriendly laws, or ambiguity within the law, or marginalization of rights in the name of environment and/or development need to be noted in order to highlight the apparent structural impediments to the enforcement of rights in a capitalist-driven economy. In the next section, I will consider the limits of the recently passed STB and what the wider implications of this are for the limits to law in terms of *adivasi* rights.

The STB, 2006

As suggested above, activists and *adivasis* cannot afford to have a completely pessimistic view about law, despite the current political economy. And, their struggle to have the STB passed is an indication that they have continued to engage with the legal avenue. Nonetheless, the same question arises – What is the potential of this law? What do the debates and developments around the STB tell us?

Earlier, I made a distinction between the making of law and the working of law, suggesting that even existing laws might not actually be implemented. Implicit in that discussion was the contention that it might be easier to make laws than to make them work because laws are made in the legislature, where the rights of *adivasis* are likely to at least be represented (if not upheld). For their part, decisions pertaining to the implementation of law occur in the executive, where no electoral compulsions exist directly. However, the developments around the STB suggest that making laws that are cognizant of rights has itself become increasingly difficult, with environmental/conservationist prerogatives assuming a more significant and different role than before. By tracing the broad developments around the STB, I hope to highlight the precarious state of the rights discourse vis-à-vis questions of the environment, as well as the somewhat problematic nature in which the discourse has been located.

To recall briefly, the main premises of the STB are that scheduled tribes and other forest-dependent communities have inhabited the forests for centuries, that their rights have not been recognized and that there is hence a need to rectify this historical injustice. Much of the debate thus far around the STB has concerned the possible environmental consequences of the bill.¹¹ These debates hotbed up with the JPC's recommendations not to have a ceiling on the amount of land allocated, to include traditional non-*adivasi* forest-dependent communities in the list of those entitled to land and to give *gram sabhas* the ultimate decision-making power with regard to the allocation of rights.

The pros and cons of the STB have been debated at length. The intent here is not to re-open these debates but to highlight how rights continue to be restricted on the basis of the hierarchy of rights set forth above. To do this, it is first necessary to point out that the final bill is a diluted version of the JPC version, which possibly restricts the impact of this bill, even if it were implemented properly. A few examples of this are illustrated below. First, Sections 2(c) and 2(o) require forest dwellers to reside in forest land (as opposed to in or in close proximity, as in the JPC draft), something that is relatively rare and likely to limit the

¹¹ The major concern is that the granting of land rights to *adivasis* will lead to a Malthusian type of pressure on forests and consequently wildlife as well. Mohanty (2005: 33) argues that the bill does not put any territorial limit on claims to forest resources and that this will lead to the unbridled destruction of forests. Although Madhusudhan (2005: 4894) admits to the need to address the genuine concerns of *adivasis*, he argues in particular that rights to land in protected areas would be detrimental to wildlife, because wildlife needs large tracts of uninhabited land.

number of claimants. Second, the *gram sabha*'s role according to Section 6 has largely been reduced to that of making recommendations about who should be given rights, placing the real decision-making power potentially with the bureaucracy. Third, according to Section 15, this law will be in addition to, as opposed to in derogation of, other laws, again providing a possible way of delimiting the allocation of rights.¹²

Returning to the broad hierarchy of rights, a few points need to be made. First, the indication is that the conservationist agenda has been taken seriously (though conservationists might disagree) and that rights are restricted because of these concerns. This has happened despite unrelentless lobbying in favour of the STB. Like pollution in Delhi and the preservation of the Doon Valley, among other things, wildlife conservation seems to be very much a part of the middle-class imagination that drives the nation's environmental consciousness. Second, as a result, other reasons for forest degradation seem to receive less attention. As the *Seminarist* (2005: 58) argues, there are 'far more powerful actors with vested commercial interests who threaten forests but do not evoke the suspicion they deserve'. These other powerful actors often represent the cause of development and therefore seem more able to either bypass existing laws, or to subvert them. The dilution of land reform legislation and the promotion of private corporate investment in the commons, for example, seem to rarely be challenged in the same way as witnessed with the STB. Third, rights seem to have no place unless they are part of a wider managerial discourse. The last-minute amendments to the STB all appear to be aimed at ensuring that the allocation of rights does not lead to unsustainable use of forest resources.

Should managerial concerns be part of such a bill? The neo-liberal discourse on rights is increasingly being tied to managerial responsibilities. What is potentially worrying about this is that the implications do not seem to have been adequately addressed. In the case of the JFM, for example, forest protection committees have often been disbanded by forest officials without adequate consultation with villagers. Might the same thing happen with this bill? While the STB no longer mentions in the main text that forest dwellers are responsible for managing the forest, mention of this is found in the preface. Moreover, the latest version of the bill reiterates the centrality of 'sustainability'. By signing up to that, might not rights be limited or withdrawn if forest-dwelling communities are deemed not to be managing the forests sustainably? Given the fact that pressures on land are increasing, is this not a likely scenario? While many might argue that linking rights to managerial responsibilities is a good thing, more important is to address the wider reasons for forest degradation, addressing its causes as opposed to its symptoms.

This is all the more pertinent given the wider practice of development. In earlier sections, I have tried to relate the manner in which rights to resources have been very much embedded in wider concerns around environment and development. Even during the hectic period in which the JPC put forth its recommendations, *adivasis* in different parts of the country continued to be uprooted in the name of development – the most notable example of course being Kalinganagar, where *adivasis* were killed while protesting against land being allocated to Tatas (Padhi and Adve 2006). In other words, while the STB was in the process of being finalized, fundamental violations of other constitutional legal safeguards continued, ironically often through the use of law. In such a context, it becomes even more problematic to subscribe to an agenda that ties rights to managerial responsibilities.

It is important to recognize that there are a number of other concerns that address the limits of law. First, even if law continues to be a source of struggle, legal safeguards need to be complemented by active engagement/opposition to a development paradigm that negates these safeguards. Notwithstanding the potential of legislation such as the PESA, it is important to remember that *adivasi* communities, even if self-governing, will continue to be located in wider territories and policy domains that affect their self-governance. It is imperative, therefore, that there is continued struggle to prevent policies introduced in the name of the greater common good from undermining the potential of *adivasi* communities to govern themselves. This will require broader alliances that engage with the parameters of economic policy.¹³ Second, it is important to recognize the plurality of *adivasi* communities in the country. The danger of a law is that heterogeneity can be undermined. The STB already excludes a number of forest-dwelling

¹² I would like to thank C. R. Bijoy for clarifying many of my doubts with regard to the final amendments made to the STB.

¹³ Such an agenda is important, given the critique that the bill subjects *adivasi* communities to living in the 'pre-modern' world. Singh (2005: 39) says the bill 'is not about survival and it is not about preserving a 'way of life'. Most *adivasis* do not have a way of life. They live in appalling conditions and it is wrong that they should have to. While such an argument is of course false – as the bill does not compel anyone to remain tied to the land – a more detailed articulation of a culturally-embedded socio-economic agenda would go some way in allaying such fears.

communities. But even among those likely to be included, it is important to recognize that cultural practices with regard to land use will differ significantly across regions. In implementing the STB, it is important that statutory law does not impose itself on particular customary practices of land use. Third, the bill should not lead to an over-essentialised discourse that is incognizant of non-*adivasi* communities situated in *adivasi* territories. Although the bill, as redrafted by the JPC, suggests the need to also guarantee the rights of traditional non-*adivasi* forest dwellers, one should be aware of what Malkki (1992) calls the ‘sedentarist metaphysic’.¹⁴ Rootedness should not be an excuse to alienate communities or households that are not deemed traditional as defined by the STB. These questions and dilemmas require more attention and debate.

Conclusion - Rethinking Law

The above concerns no doubt are normative concerns that, given the current political economy of development, will not necessarily materialize. However, it remains important to articulate them (at least tentatively) because, as an agenda of social change, law is clearly complex in nature. In this final section, I summarize the arguments put forward and try to situate law in the context of rights struggles.

First of all, while law is often seen as a way to articulate normative concerns, there are a number of such concerns and at times they conflict with each other. Although law has been an important instrument with which to address the rights of *adivasis* and their customary claims, such rights have often come into conflict with wider developmental prerogatives, whereby law also assumes an important role in the project of development. The result has been that protective legislation for *adivasis* has often played second fiddle to the greater common good. In more recent times, the environment (as well as development) has assumed the role of *bête noire* for *adivasis* fighting for their land rights. While protective measures were clearly part of the constitutional agenda, and the passing of the PESA and the STB are indications that bills in the spirit of the Constitution can be introduced and even passed, these bills/acts are often watered down, ambiguities remain prominent and implementation is poor at best.

Second, a more disaggregated and nuanced reading of law is required. Some scholars have highlighted the fact that statutory law is a reflection of complex social reality and is contested and reconfigured in different micro-contexts (Pathak 1994a, 2002). Although such arguments are important and valid, I have suggested in the above discussion that law nonetheless emerges in a hierarchy of sorts. It would be too simple, in other words, to argue that somehow all actors equally shape law or that all ideas receive similar attention. As Bhatia *et al.* (2005) have argued, protective legislation is often shelved in the wider context of the political economy of development. Moreover, although law manifests itself differently in different micro-contexts, this does not detract from the fact that statutory law itself often has quite devastating impacts, in the immediate sense, in all regions where a particular law applies.

Given such a critique, how does one position oneself in terms of the usefulness of law? At one level, in a society where law essentially lays down a prohibitive regime, it becomes critical to engage with that law if such a regime acts as a barrier to constitutional provisions related to rights. Second, as Pathak rightly points out (1994: 3138), activists are ‘bound by the politics of the immediate’ and necessarily must act in ways so that law itself becomes an advantage. The advocacy in favour of the STB is no doubt an attempt to make use of the opportunities that law might provide.

However, the positioning of law within the wider politico-economic domain can also not be ignored. While there is evidence that the courts have at times interpreted the law in ways that privilege the rights of the marginalized, there are also cases in which such rights seem to hardly matter. And as we have suggested, the violation of constitutional provisions in the name of development is certainly more prominent than the gains made because of available legal spaces. The politics of the immediate, therefore, needs to be supplemented by a wider engagement with both discourse and policy that is aimed at deliberating about development itself. While this might be obvious and even trite, it is unlikely that law can effectively challenge the juggernaut of development without in a sense re-imagining what one means by development and how discourses on identity (in this case *adivasi* identity) are to be conceptualized.

¹⁴ The sedentarist metaphysic highlights the manner in which identity discourses are rooted in the idea of place.

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BIODIVERSITY, LIVELIHOODS & THE LAW

The case of the 'Jogi-Nath' snake charmers of India

Bahar Dutt

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FOREWORD



सत्यमेव जयते

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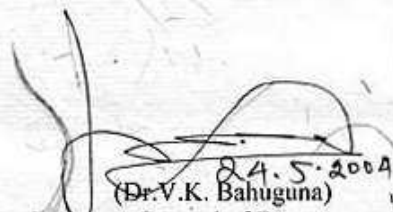
Foreword

A lot of literature is available these days on the subject of forests and wildlife resources in the country but so far no one has attempted to document the lifestyle and skills of the communities who use these resources or in this case of the snake Charmers of India. The famous snake charmers of India have always been a source of entertainment and curiosity for a large number of people particularly the western media which have portrayed them as symbol of exotic India. This report entitled "Biodiversity, Livelihoods and the Law" is not only interesting to read but its contents provide for the first time a well researched compilation of the snakes used by the snake charmers, the livelihoods of the community and their lesser known skills as traditional healers. The report is the result of intensive work undertaken by the author for one of the leading non-Government organisation working for wildlife, the Wildlife Trust of India.

The report brings into sharp focus the issue of livelihood of traditional communities whose claim to their profession and socio-cultural compulsions were ignored when the law was framed. For the long term conservation of natural resources and forests and in this case the snakes (who play a unique role in ensuring food security in the ecosystem), it is necessary that a framework for participatory conservation strategy is evolved. To ensure this, the author has recommended for creation of Sapera Centres where the knowledge of these people is utilized for conservation education, sale of herbal medicines is practised and rescuing snakes from agricultural fields where they are a potential threat during the harvest season or use their skills for generating awareness about venomous and non-venomous species of snakes. This report also brings into the limelight the poor health of the captive snakes. The author deserves the credit for taking up the cause of the snakes and snake charmers. The report can be a catalyst for action for researchers, wildlife administrators and policy makers. In a nutshell, the report is a fascinating reading material for all those who love the beauty of nature and who explore the hidden treasure of the skills and knowledge of people of India. Importantly, the report does not stop at just research but also depicts possible interventions and important recommendations to policy makers on the way out of this complex issue.

Date: 24.5.2004

Place: New Delhi


(Dr. V.K. Bahuguna)
Inspector General of Forests



जहाँ है हरियाली।
वहाँ है खुशहाली।।

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AUTHOR'S NOTE

I first became curious about snake charmers in 1999 when I visited Mollarbandh, a small settlement of 150 snake charmers on the outskirts of Delhi. Armed with a degree in wildlife conservation, I was sure that the only way to tackle problems of wildlife conservation, animal welfare and biodiversity issues was to work with the people who use wild animals, and, in some cases, exploit them to earn a living.

In the initial days, the going was tough. When I first visited the community of Jogi-Naths all I encountered was hostility. They were suspicious and they tried every method possible to drive me away - from being openly rude to putting snakes in my bag.

The Jogi-Naths are not an easy community to work with. Alcoholism and drug addiction are common among them and they do not accept outsiders easily. The process of getting to know the community has been slow, but today I have friends in snake charmer villages across India. Now, when I travel, I have a place to stay in hundreds of tiny hamlets of snake charmers.

Over the past one year I have been travelling - some

times alone, some times with other members of our project team - interacting with snake charmer families and living their lives with them. Perhaps, the most poignant picture that comes to mind is that of 70-year-old Mishrinath, whom we came across perched on the sand dunes of Rajasthan. Once a snake charmer, Mishrinath today weaves colourful bags, which he sells to members of the community for carrying snakes. Mishrinath cannot see very well, but he gave me some surma - a special herbal medicine made by the snake charmers - to improve my eyesight.

No community is perfect. The snake charmers, too, have their personal rivalries. Some look after their snakes well, some do not. This report is not an attempt to paint a romantic picture of a community. There are serious animal welfare concerns as well as poverty issues involved, both of which need to be addressed. I hope we have been able to give some suggestions for both stakeholders: the snakes and the snake charmer.

Bahar Dutt

April 2004



Rachel Kaletta

70 year old Mishrinath *sapera* from Rajasthan weaves bags for other *saperas*

EXECUTIVE SUMMARY

In India there are many communities who are dependent on wild resources for their life and livelihood. The Jogi-Nath snake charmers are one such community. Spread across tiny village hamlets in five states of northern India, the community today is at a crossroads. In 1972, the Indian Wildlife (Protection) Act was introduced in an effort to protect India's fast depleting wildlife. The Act imposed a strict ban on any use of wild fauna for commercial or subsistence purposes. While this has led to a very positive scenario for wildlife conservation in the country, the livelihood of thousands of snake charmers was rendered illegal.

The Wildlife Trust of India decided to research how modern conservation laws were affecting the livelihoods of the snake charmers and, conversely, how their use of snakes was affecting conservation of various species. The project also responded on a small scale to the livelihood needs of the *saperas*, a synopsis of which is presented in Chapter 5 of this report.

For the research component first hand data was collected by a multi-disciplinary project team. The data presented in this report has been generated over a period of one year, although informal contact with the snake charmer community has been ongoing for three years.

The research findings are organised under three heads:

● **Socio-economic status of the Jogi-Nath saperas:** Nearly three-quarters of the community members continue to use snakes to earn a livelihood. The average income per day from snake charming exceeds the minimum wage rates prescribed by the government in the states in which they reside. Thus, the snake charmers are still able to earn a major proportion of their household income from snake charming. Traditional knowledge related to the profession is still quite high: nearly four-fifth of the community members know how to catch a snake as they believe it is related to their caste identity.

● **Herpetology and condition of the snakes:** On an average seven snakes per year were caught by one snake charmer. In the absence of any baseline data on number of snakes found in the wild, we were unable to estimate if this use is at sustainable levels or not. Eight species of snakes were found to be kept in captivity by the Jogi-Nath *saperas* of which the maximum number were Common cobras followed by Rat snakes. Two species of conservation concern were also found, namely the Royal snake and the Indian python, but these were observed

only in a small percentage of the households sampled. Animal welfare concerns are high, as body condition of all species of snakes kept for more than one month in captivity was weak

● **Ethnobotanical information:** Snake charmers prepare their own herbal medicines and as many as 110 species of plants were mentioned. None of the plants mentioned are rare or threatened and most were common weed species. The snake charmers thus provide informal health services, in a country where access to primary health care facilities is low. But the efficacy of many methods used by them needs further research. Snakebite treatments were among the most frequently mentioned ailments, with any one healer treating up to fifty patients per year. However in the case of snakebites by venomous species the role of the traditional healer is limited to the psychological support that it may give to a victim especially in areas where anti-venom is not available

Key recommendations: The main results of this report have shown that snake charming, despite introduction of regulatory conservation laws, is thriving. The Jogi-Naths have over generations been able to create their own niche in village life: one of catching snakes, dispensing herbal medicines and of entertaining audiences with snakes. In a country, where unemployment rates are high and thousands of educated persons compete for jobs, snake charmers have carved their own niche in the employment sector. This niche is of relevance, especially in an agricultural economy where pressure on land is tremendous.

There is thus a disbalance between conservation regulatory laws and the traditional occupation of the snake charmers. In the final chapter, recommendations have been made to policy makers on how this conflict can be addressed. Amongst a number of recommendations it is urged that the skills of the community be used through the employment of snake charmers as '**bare feet conservation educators**' to educate people on venomous and non-venomous species of snakes. This would not only protect their culture and identity but also assist in the protection of snakes killed by ignorant people. It is also suggested that their musical culture be promoted through the formation of musical bands, sale of music instruments handcrafted by the community, and their role as traditional healers. A combination of these interventions can help in keeping the identity of the community intact without endangering the lives of snakes in the wild.

CHAPTER 1

INTRODUCTION

According to one estimate, about 300 million people are dependent on forests and their products, of which 200 million people live below the poverty line



A traditional healer with plants collected from the forest

1.0 Community use of wildlife in India

Wild resources play a major, and often critical, role in the livelihoods of a high proportion of the world's population (Pimental et al., 1997). More than 70 percent of India's population is rural (Census 2001, GoI), but not all of them practice agriculture for a livelihood. A substantial proportion of the rural households depend on forest resources - both plants and animals - for subsistence and income generation. Some communities are directly dependent on wildlife for their livelihood, while a significant number depend on wildlife habitats for natural resources such as fuel-wood and fodder. According to one estimate, about 300 million people are dependent on forests and their products, of which 200 million people live below the poverty line (Saxena et al., 2000). Despite the obvious contribution of wildlife to the life of people, there life of people, there are currently no reliable estimates on total supply, subsistence, trade and consumption of wildlife across India.

Even though accurate information does not exist on the exact scale of use of wildlife, the identity of some communities in Indian society is traditionally centered around the use of one or many wild faunal species. For instance, the Bahelias in northern Uttar Pradesh are famed for their skills of trapping birds, the Madaris for trapping macaques, the Badhlias for civets, foxes and jackals and the Irulas in Tamil Nadu for trapping snakes and rodents. (See Table 1). According to the Anthropological Survey of India there are as many as 196 communities in the country that are engaged in trapping of birds and animals for their livelihood (Singh, 1991). This report looks at how modern conservation laws have affected the livelihoods of one such traditional community: the Jogi-Nath *saperas* (snake charmers).

1.1 Who are the Jogi-Naths?

Every morning 45-year-old Aryanath sets out with a flute and two cane baskets flung across his shoulder on a bamboo pole. In the basket are snakes he has trapped: a cobra and an earth boa. As soon as he spots a busy corner of the street he sets up his wares. He plays his flute to draw the attention of passers-by, and once a group gathers, the snakes are let out of the basket.

For their ability to charm deadly snakes, members of the Jogi-Nath community came to be known as the snake charmers or *saperas*. Different snake species are used by

Table 1: Some examples of traditional communities using wild animals

Community	Wild animals hunted	States
Badhiyas	Jackals, civets, mongoose	Uttaranchal, Uttar Pradesh, Rajasthan
Jogi-Naths	Snakes, hedgehogs, spiny-tailed lizards	Rajasthan, Haryana, Uttar Pradesh, Gujarat, Madhya Pradesh
Bawarias	Partridge, quails, small mammals	Rajasthan, Haryana, Uttar Pradesh, Delhi, Bihar
Irulas	Primarily snakes	Andhra Pradesh, Tamil Nadu
Sapuakelas	Snakes, primarily King cobras	Bihar, Orissa
Kanjars	Jackals, lizards and small mammal species	Uttar Pradesh, Rajasthan, Madhya Pradesh, Bihar, West Bengal
Baheliyas	Various species of birds	Uttar Pradesh

Note: This is not a comprehensive list but only indicative of the number of communities whose caste identity and livelihood is linked closely with wild animals.

them to entertain street audiences and earn a living. This skill not only gave them an occupation but also a god-like respect in society. The skill to handle snakes is not new to the Jogi-Naths but is embedded in their caste identity. The knowledge of trapping and handling of different species of snakes is passed down over generations.

This reference to caste is crucial in our understanding of the Jogi-Nath community. Each caste in Indian society is a self-governing social unit with a hereditary prescribed mode of subsistence. Indian society comprises of 45,000 endogamous groups. Over 37,000 groups are structured in a system called the Hindu caste system. (Malhotra, 1984). Individually each group is called a *jati* or caste. The division by caste is the reason why the ancient profession of snake charmers survives till today with the knowledge and skills of the profession being passed down over generations from generation. To this day, snakes are intricately woven into all aspects of their lives - from the herbal medicines they prepare to treat snakebites to their marriage ceremonies in which snakes are offered as gifts. The Jogi-Naths are found in small village hamlets across the country. Map A shows the geographical spread of the community while Map B shows how far the Jogi-Naths travel for their livelihood. More details about the community and their demographic status are given in Chapter 2.

1.2 Existing conservation scenario in India and status of snakes

The use of wild animals for trade or subsistence purposes by communities was deemed illegal in the mid 20th century. A multiplicity of factors led to the introduction of regulatory conservation laws which aimed at putting an end to the use of wildlife, whether by local communities or organized industries. Till 1972, when the Wildlife

Protection Act (WPA) came into being, India was a major player in the international trade in reptile skins, cat skins, ivory, live birds, frog legs and live mammals like rhesus macaques. It was in response to the rapidly depleting wildlife that strict conservation laws, which sought to reverse this trend, were introduced.

The WPA is a comprehensive piece of legislation that lays down rules and regulations for the protection of India's biodiversity. Not surprisingly, the Act, with large-scale prohibitions on hunting and trade, was restrictive but in tune with the requirements of time (Misra, 2001). The Act prohibits any hunting of wild animals and trade in trophies, animal articles and derivatives.

As a result of tough conservation measures, the depletion of crucial wildlife resources has been slowed, though problems of poaching and habitat destruction still persist. Around 23 percent of the country's area is officially classified as forest land and India is recognized as one of the 10 mega-diverse countries of the world. With 45,000 plants (i.e 7 percent of the world's known plants) and 81,000 animal species (6.4 percent of the world's known fauna), India boasts of a rich biodiversity heritage.

1.3 The Jogi-Naths persecuted: Episodes of arrest and a fear psychosis in the community

In the effort to clamp down on rampant trade, the Jogi-Naths, who did not by tradition, trade in snakeskins but used snakes nonetheless, had to pay a price. A complete ban on trade of wildlife species and its derivatives impacted the livelihood of the Jogi-Naths but this fact was not addressed adequately by the state which focused on a complete clampdown on illegal trade.

● *In 1991 Pappunath was arrested from outside Surajkund, a tourist hotspot near Delhi. His crime: trapping of snakes from the wild in violation of the*

Trade in snakes and the snakeskin industry in India

The Wildlife (Protection) Act, 1972, tough as it was, was much needed, given that in the past millions of snake species were killed for the snakeskin trade. Statistics for 1968 indicate that no less than 10 million snakes valued at Rs. 107 million were slaughtered for trade. It has been estimated that in 1932 about 2.5 million skins were exported from India. It was much later that conservation restrictions were introduced and finally a total ban was imposed on wildlife exports in 1976. The species commonly used in the snakeskin trade were the Rat snakes (*Ptyas mucosus*), the Common cobra (*Naja naja*), the Checkered keelback (*Xenochrophis piscator*), the Russells viper (*Vipera russellii*), the Indian sand boa (*Eryx conicus*) and the Olive keelback (*Atractaspis schistosum*) (Inskipp, 1981). According to one estimate, the number of snakes that were caught for the snakeskin trade was so large that a tannery in southern India was handling 9000 skins in one day, which was reduced to 3000 by 1970 (Daniel, 1970).

Wildlife (Protection) Act. Pappu's snake was seized, he does not know what happened to it. In the morning, people from his village secured his release in return for a bribe. Pappu is still fearful of the officials, but soon after he was freed he went out and caught another snake as he knows no other skills. (Interview with Pappunath sapera from a village in Haryana, in May 2003)

- *In 2002, Jitanath was returning to his village in Uttar Pradesh after performing with his snakes in Agra. He was caught by the Forest Department who released his snakes in the wild and let him go after a stern warning. Jitanath now wanders in nearby villages with his snakes, as he is too scared of being caught by the enforcement authorities. (Interview with Jitanath sapera from a village in Uttar Pradesh, in May 2003)*

- *In 1998, a camera team arrived in a village near Delhi on the pretext of shooting a film on snake charmers. As the snake charmers displayed their snakes for the film, the camerapersons revealed their identity. They were from the Forest Department and arrested five snake charmers from the village for illegal possession of a python and a cobra. (Interview with residents of a snake charmers village near Delhi, January, 2004)*

The job of preventing illegal trade is monumental. Forest and wildlife authorities across India have been active in conducting raids on unlicensed dealers. Tribal and rural people, however, rarely understand the law and, in some cases, continue to flout it despite being aware of the repercussions. The Jogi-Naths, for instance, continue to use snakes more than three decades after the WPA was enacted despite the fact that sections of the WPA rendered this illegal.

Under Section 9 of the Wildlife (Protection) Act, 1972: '*No person shall hunt any wild animal as specified in Schedules I, II, III and IV of the Act.*' Almost all the species of snakes used by the snake charmers are included in the above mentioned schedules of the Act, thus virtually rendering any trapping of snakes from the wild as illegal.

Further, under Section 39 of the WPA '*wild animals are government property*' and

'No person shall without the previous permission in

writing of the Chief Wildlife Warden or the authorized officer- acquire or keep in his possession, custody or control, or transfer to any person by way of gift, sale or otherwise or destroy or damage such government property.'

Given these provisions of the WPA, the Jogi-Naths can no longer use snakes to practice their traditional occupation. Today the *Sapera Samaj* (snake-charmer community), a conglomeration of thousands of Jogi-Nath *saperas* from across the country, is worried. The raids against them continue but many of them still depend on charming for survival, practicing their craft even after serving jail sentences or paying fines. On the one hand the caste divisions in the country, their nomadic lifestyle and low levels of education have made it impossible for the *saperas* to shift to new occupations, on the other, strict enforcement of laws has made it difficult for them to practice their traditional occupation using snakes.

1.4 Scope of the project: Addressing the knowledge gap

Given this background, the Wildlife Trust of India decided to research how modern conservation laws were affecting the livelihoods of the snake charmers and, conversely, how their use of snakes was affecting conservation of various species. Queries central to the project were: How many people were still practicing snake charming, what were the snake species used by them and at what scale? Secondary literature, if any, was minimal, whether about the Jogi-Naths or the snakes they keep. First hand data was collected by the project team. The data presented in this report has been generated over a period of one year, although informal contact with the snake charmer community has been ongoing for three years.

Our work with the community had a strong research component, but it was difficult to collect data without responding to the needs of the *saperas*. Therefore, along with the study, the project aimed in small ways to promote their livelihoods and culture. We also wanted to make policy makers aware of the plight of the *saperas* and organized extensive meetings and dialogues between the community and government officials. Some aspects of our work with them is presented in Chapter 5.

The aims and objectives of the project are as follows:

1. To study existing livelihood strategies of the *saperas* and the impact of the ban on snake charming on their way of life.
2. To implement, on a small scale, the livelihood needs of select snake charmer families.
3. To examine the snake species being used, the scale of capture and the husbandry practices used by the *saperas* and how this affects the survival of the captive individual and long-term survival of the species.
4. To document the indigenous knowledge of the Jogi-Naths in relation to trapping and handling of snakes, ethnobotany and culture and traditions related to the use of wild resources.
5. Through workshops, meetings at local regional and national levels influence policy makers, government and nongovernment organizations about the plight of the *saperas* as a result of wildlife laws which have banned their occupation.
6. To create awareness amongst leaders in the *sapera* community about the need for conservation and protecting wild species and the reasons wildlife laws had been introduced.

1.5 Methodology

Research for this project was carried out in two parts. In the first half, contact was established with the snake charmer communities within Delhi to identify their counterparts in other states of India. On the basis of the villages that were identified, a reconnaissance survey was conducted in the months of May-June 2003. This helped

the project team to physically verify snake charmer villages, estimate the number of people still engaged in this occupation and compare the problems of the snake charmers in rural and urban areas.

In the second phase of fieldwork, one village each in the states of Haryana, Rajasthan and Uttar Pradesh was identified for a more comprehensive, multi-disciplinary survey which was conducted in January-March 2004.

Two criteria were used in the selection of the village - that it should be remote (at least 50 km away from a city centre) and the *saperas* should be willing to have the project team stay with them and share information openly. This was crucial as snake charming is illegal and, therefore, the snake charmers are extremely skeptical of outsiders.

More details on the bio-geographical profile of the areas covered and the population of each village are given in Chapter 3. Once in the village, data was collected through a combination of questionnaires, community consultations, transect walks and extensive night halts

with families which helped us authenticate the primary data being collected.

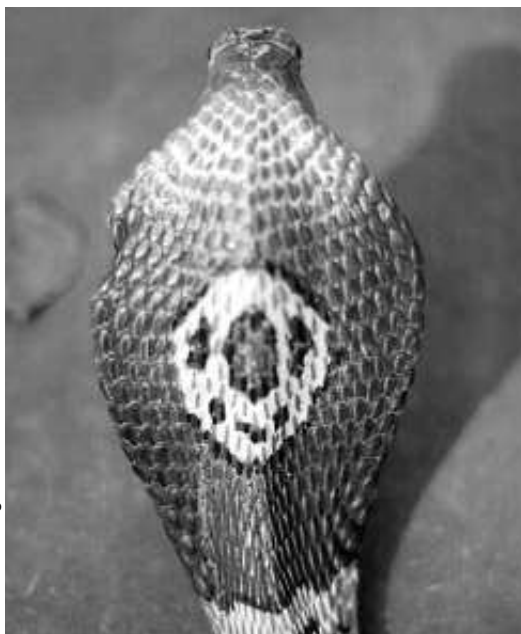
Three types of information were collected: socio-economic, herpetological and ethnobotanical. For each type of information, a person skilled in that discipline was in charge of leading the survey and a separate questionnaire was devised for each subject. A sample of the questionnaire from each discipline is given in Appendix I, II and III. For the socio-economic survey, members of 100 households in all three states of Haryana, Uttar Pradesh and Rajasthan were interviewed. In the case of ethnobotanical information, ten key informants were selected from five of the study villages, to provide information concerning the traditional knowledge, social structure, and economics of the profession related to traditional medicines. Two generations of healers were sampled by interviewing at least one older (over 35 years of age) and one younger healer (under 35 years of age) in

each state. Due to the sensitive nature of the information gathered, informal semi-structured interview techniques were used, and interviews were often carried out over a period of several days (Bernard, H.R. 2001, Martin, G.J. 1997). This study focused on the wild harvested plant species used in herbal medicine. Two methods were used (see Martin, G.J. 1997 for methodology). Firstly, informants were requested to freelist the plant species they use for medicinal purposes. Information was then gathered on the source, preparation and utilisation of the plant. Secondly, the informants were accompanied on a walk in the

vicinity of the village. The informants led this walk, choosing the areas where they usually collected plants. Each walk lasted approximately two hours. Botanical specimens were collected of all the medicinal plants encountered which are used by the snake charmers. A total of 58 botanical specimens were collected. These specimens were identified by Dr. Sanjay Kshirsagar of the Department of Botany, University of Delhi, and have been deposited in their herbarium.

For the herpetological information, 50 households in the three states were interviewed and 135 snakes of different species were examined for their health conditions.

The survey was thus multi-disciplinary in nature in order to study all aspects of the lives of the *saperas* related to conservation.



A monocellate cobra

CHAPTER 6

KEY RECOMMENDATIONS

In a country, where unemployment rates are high snake charmers have carved their own niche in the employment sector. This niche is of relevance, especially in an agricultural economy where pressure on land is tremendous.

The main results of this report have shown that snake charming, despite introduction of regulatory conservation laws, is thriving. The reasons for this are cultural, social and economic. Firstly, snake charmers fulfil a role in rural areas as traditional healers, treating snakebites as well as common ailments. While the efficacy of many of the treatments need further investigation we found many healers having established clientele across states which indicate their popularity. In a country where access to primary health care facilities is minimal, snake charmers are providing informal health services to a large section of the rural population. Second, snake charmers are still able to earn a reasonable amount of money from snake charming. In a country, where unemployment rates are high and thousands of educated persons compete for jobs, snake charmers have carved their own niche in the employment sector. This niche is of relevance, especially in an agricultural economy where pressure on land is tremendous.

From the point of view of conservation, the use, on an average, of six to seven snakes in a year by the snake charmers *per se* may not necessarily be detrimental to the overall survival of the species when compared to the number of snakes killed for the snakeskin trade which was around 9000 snakes per day as mentioned before. The status of snake species in the wild needs to be investigated further and requires more detailed research, which is expensive to undertake and also difficult to do in the case of cryptic reptiles like snakes.

Assessing the biological status of snake species can take many years. But the dilemma before us needs to be addressed immediately. On the one hand is the dependence of over 2-300,000 Jogi-Naths on this traditional occupation, on the



Shifting sand dunes of Rajasthan

other is the welfare and conservation needs of snake species used by them.

6.1 So is this a win-lose situation for biodiversity conservation vs. livelihoods?

In the past year we have had discussions with experts, human rights activists, scientists and herpetologists to come up with a way out of this dilemma. Can conservation and animal welfare needs be reconciled with the livelihood needs of a large population that knows no other skill? In Table 11 we have tried to present the various options suggested to solve this complex problem. We also weighed the pros and cons of each suggestion given. Examining the options stated, we find that one way or the other there is a compromise either on the livelihood needs of the community or on the welfare/conservation needs of snakes. Even the suggestions which came from the community were extreme.

If we examine the option of issuing permits so that the snake charmers can continue with their traditional occupation, there are two lobbies strongly opposed to this. One, the animal welfare activists who have rightly pointed out that the snakes are treated badly and the procedure for removal of the venom apparatus (especially since venomous snakes are favoured by the snake charmers) is extremely cruel and inhumane. Second, are the wildlife conservationists who are opposed to the issuing of permits for snake charming. The fear is that issuing permits would open the floodgates for uncontrolled exploitation of snakes for the illegal snakeskin industry. Thus snakes would be collected from the wild in the name of snake charming and be supplied to the illegal wildlife trade.

Further, not just the Jogi-Naths, but many other communities are engaged in snake charming and this could lead to unsustainable exploitation of snake populations given the sheer numbers of such communities.

6.2 A balanced approach: Using traditional skills for conservation

While there is weight in the reasons put forward against issuing of licenses, other creative means must be sought

for addressing the livelihood needs of the Jogi-Naths. While weighing the pros and cons of the options stated above, we analysed what a balanced approach should contain:

- Use the skills of the snake charmers as 'Bare Foot Conservation Educators'.
- Use the skills of the community to protect snakes that may potentially be killed due to conflict with human beings.
- Use their skills as traditional healers, especially in rural areas where access to health facilities is not easy and people have more faith in indigenous methods of treatment after validation of their treatments through further research and registration with Ayurvedic colleges or government bodies dealing with traditional medicine systems

Keeping these points in mind, we advocate the setting up of an institutional framework that would help balance the livelihood and conservation needs.

The role of the *Sapera* Centre could be the following:

- Venom collection and immediate release of snakes back in the wild.
- Treatment for persons suffering from snakebites through administration of anti-venom injections.
- Sale of herbal medicines made by snake charmers to treat different ailments after registration and verification with Ayurvedic colleges or government bodies dealing with traditional medicine systems
- Education classes conducted by snake charmers for the general public on how to distinguish between a venomous and non-venomous snake.
- Rescue of snakes from agricultural fields or human habitation and release in the wild for a small fee.

There is scope for starting *Sapera* Centres in areas inhabited by the snake charmers. These centres could function as establishments for promoting related

Setting up of 'Sapera Centres' in northern India as an institutional framework would address the livelihood needs of the snake charmers while ensuring regular monitoring of their work.



Vikram Hoshing

CObras trapped by the Jogi-Naths

livelihood practices like dairy farming, cultivation of medicinal plants and been parties. They could also act as information centres where information on snakes can be imparted to children through lecture demonstrations by the snake charmers. It was observed that snake charmers possess alternative skills like jute bag making and horse breeding. These skills could be tapped as well. Their skills as traditional healers could also be promoted as an occupation after further validation of their treatments.

The *Sapera* Centre could help the state earn revenue while imparting a public service role and providing employment to thousands of snake charmers who, today, face possible extinction of their profession and skills which are exclusive to their caste. The extraction of venom from snakes can be sustainable and is not new to India. There is already a cooperative in South India which is run by a traditional snake catching community called the Irulas and the project has demonstrated that application of tribal knowledge to generate income from wild animal sources is possible (Whitaker, 1995).

The government departments that would be involved would be the primary health care services in collaboration with the Forest Department and a non-governmental organisation that could play the role of facilitator in helping the Jogi-Naths form cooperatives and getting them registered.

6.3 Recommendations to policy makers

Since the introduction of the Wildlife (Protection) Act in 1972, several policy documents and initiatives have been introduced by the Ministry of Environment and Forests which recognise the problem of strict implementation of conservation laws. The National Conservation Strategy and Policy Statement on Environment and Development (1992) and the Wildlife Conservation Strategy (2002) of the Ministry of Environment and Forests have all emphasised the need to address the livelihood needs of local communities and use of their skills for conservation. These policy documents further stress the need to educate people and spread awareness about biodiversity and the need to protect it.

Further, in 2002, the National Forest Commission was set up with the specific tasks to "review and assess existing policy and legal framework and their impact in a holistic manner, from the ecological, economic, social and cultural viewpoint." And "to establish meaningful partnership and interface between forestry management and local communities including tribals." Keeping these policy initiatives of the Government of India in mind, we strongly recommend the following:

- A detailed investigation must be carried out by the National Forest Commission on the impact of regulatory conservation laws on certain traditional communities across India to examine the extent of their dependence on wild animals and livelihood options available to them.
- Setting up of institutions such as the *Sapera* Centre which recognises their traditional skills and maintains a balance between conservation and livelihoods.
- Use the skills of the Jogi-Naths for educating people in rural and urban areas about snakes, their ecological role



Vikram Hoshing

A red spotted royal snake in captivity

and the difference between venomous and non-venomous snake. This role is already being performed by students, NGO activists and amateur herpetologists in the cities of Bangalore (Karnataka), Pune (Maharashtra), Delhi, Rajkot (Gujarat) for which snake charmers could be easily trained. Formal training can be imparted with the assistance of NGOs. Registration of the snake charmers should be undertaken as 'Barefoot Conservation Educators'. The registration can be undertaken with existing government agencies such as the Animal Welfare Board of India and the Central Zoo Authority.

- Recruitment of the Jogi-Naths in the State Forest Department with the specific task of rescuing snakes from human habitations and releasing them in the forest.

It would be easy to just let the ancient tradition of snake-charming come to an end. On the other hand a lot can be done to save the traditional skills of this community, caught between their past and modern conservation laws. Employment of snake charmers as 'Barefoot Conservation Educators' would not only protect their culture and identity, but also assist in the protection of thousands of snakes that are killed by ignorant people. The need of the hour is to address the livelihood needs of the snake charmers in a phased manner with the requisite infrastructure and adoption of innovative methods.

Table 11: OPTIONS AVAILABLE TO SNAKE CHARMERS

S No	Options	Pros	Cons
1	Increase enforcement so that snake charming is forcefully banned.	Would lead to complete end to snake charming and use of snakes by the Jogi-Naths.	Easier said than done. Does not address employment issues. Would mean a loss of a culture and associated skills of a people who have the unique ability to handle snakes.
2	Regulate use of select species of snakes through licenses and close monitoring. If a snake dies before, due to bad management practise, then the license can be cancelled.	Would allow snake charmers to continue in their traditional occupation.	Still means that snakes are defanged and kept badly if inspections are not monitored closely. Monitoring too would not be easy.
3	Intensive education and employment opportunities so that they do not turn to snake charming.	A long-term intervention which also addresses the development needs of the community.	Does not address the immediate income needs of thousands of families.
4	Breed snakes in captivity for use by snake charmers.	Would allow them to continue in their traditional occupation.	Difficult to monitor if snakes have been caught from the wild or bred in captivity. Does not address animal welfare concerns.
5	Use the skills of the snake charmers for conservation education and protection of snake species.	Balanced approach which addresses conservation needs and livelihood requirements through the traditional skills of the community.	Requires commitment from government agencies and strict monitoring and enforcement.

Appendix VI

WHAT DO THE EXPERTS SAY ?

In this section we present some views of herpetologists, scientists and amateur snake experts about the profession of snake charming, how the snakes are treated by snake charmers and the future of this occupation.

'Nag-Panchami in Mumbai': Kedar Bhide, Reptile Rescue Centre, Mumbai

Reptile Rescue and Study Centre (RRSC), Mumbai, is an independent organization functioning in and around Mumbai city. RRSC has a volunteer force and we attend to calls to rescue snakes trapped in houses and also in distress.

Snake charming occurs in and around Mumbai city all year round in very minimal proportions. Snake charming takes a new meaning in the city during the *Nag-Panchami* festival. In Mumbai and its outskirts, the *Nag-Panchami* festival comes with a large number of snakes being brought into the city from northwest Rajasthan by the Naths and sold to fake snake charmers for *Nag-Panchami*. These are mostly local people who will sit outside temples begging for alms. Their snakes include a large number of cobras (*Naja naja*), Rat snakes (*Ptyas mucosa*), Sand boas (*Eryx conicus*), Earth boas (*Eryx johnii*), Royal snake (*Articeps diadema*) and the occasional Rock python (*Python molurus*). A couple of years ago we were astounded to see charmers with a Flying snake (*Chrysopelea ornata*) and a Brown Vine Snake (*Ahetulla pulverulentus*) on *Nag-Panchami* day.

Our centre conducts special awareness programs in the fortnight leading to *Nag-Panchami* to dispel myths associated with the festival. The response of school children to this program is overwhelming. In the past two years, RRSC volunteers handed out idols of snakes to the charmers from whom the snakes were confiscated. This was an attempt to reduce the use of live snakes for worship. It was heartening to see the willingness with which these idols were accepted.

A sad aftermath of the festival is noted in the week following *Nag-Panchami*. Volunteers at RRSC are often called out to rescue snakes that have been randomly released by the snake charmers at the end of *Nag-Panchami* day. These snakes are barely alive and more often than not die despite best efforts.

'Friends of the snake charmers': Rupali Ghose, Rajkot, Gujarat

I have had a close rapport with snake charmers from different parts of the country, especially West Bengal, Bihar, Orissa and Gujarat. I was interested in snakes and that is how I got interested in snake charmers. I have learnt quite a lot from them and the skills they have are unique. These include their ability to recognise the species of a snake from the snakebite, their knowledge of herbs and variations in the breeding seasons of snake species according to the weather, and the ease with which they handle venomous snakes. Snake charmers in Gujarat are engaged mostly in agricultural work or street performances. They are harassed much by animal activists but not so much by the Forest Department. I think their skills can be used for conservation education as they have a lot of knowledge which is very practical.

Suggestions on husbandry: Gowri Mallapukar, veterinarian surgeon, Pune

Most of the snakes found on *Nag-Panchami* have severe infection in the mouth due to defanging and removal of venom glands. They appear to have been kept in the same baskets for more than a couple of days and the humidity leads to pneumonia which is enhanced by dipping them in milk on the day of *Nag-Panchami* for the ritual. The *kumkum* and *haldi* used in the ritual is aspirated and causes severe irritation to the eyes. The Rat snakes (*Ptyas mucosa*) have various degrees of scale rot, subcutaneous abscesses and at times broken bones so as to prevent movement. The Sand boas are tied in knots and put into small cloth bags. They are removed only for display on the festival day. Broken bones, emaciation, dehydration and mouth rot is commonly noted in these snakes.

The most difficult part of maintaining snakes in captivity is management of the infections caused by the removal of the venom glands. Severe mouth rot infections are noted. The snakes rescued on (and after) *Nag-Panchami* have enteritis leading to severe dehydration and severe respiratory tract infections due to aspiration of milk and the *haldi* and *kumkum*. Due to the humidity in the snake basket and poor basking, the snakes improperly shed moults, especially the eye cover, which then leads to blindness.

The challenge is to treat these infections effectively and provide appropriate management practices for recuperation. Management practices need to be followed stringently. All the snakes should be kept in independent boxes. The cages have to be checked regularly for defecation or regurgitation by the animal and have to be cleaned as soon as possible. Basking can be provided by natural light or by means of artificial sources like heating pads or bulbs. Maintenance of a temperature gradient is essential. Maintenance of an appropriate ambient temperature is the defense mechanism of the reptile against diseases. Hiding areas made of cardboard boxes or natural material for crepuscular snakes (e.g. cobras) are essential, as is the provision of some rocks and stones which will facilitate moulting.

Romulus Whitaker, Centre for Herpetology, Chennai

(Whitaker has set up a Snake Venom Collection Centre which is managed by an indigenous community, the Irulas)

Unfortunately there are no studies to show that snake populations have bounced back since the introduction of the Wildlife (Protection) Act (1972), but our experience is that snake populations have, indeed, bounced back in most cases. It seems pretty obvious that this should be the case when you consider that up to 10 million skins were exported every year prior to 1976. Of the species used by the snake charmers, only the python and King cobra have much to worry about and that, too, mainly because of habitat loss. At Bhitarkanika sanctuary in Orissa, for instance, people have expressed concern that the snake charmers have been over-harvesting King cobras for so many years that numbers are visibly lower. Again, no one has done a study, but I can imagine that hundreds, if not thousands, of King cobras have been removed from that area over the last decade or two.

In the case of the snake charmers, aside from the cruelty factor (defanging, starvation, mishandling, etc.), it would seem to me that seven snakes per year per snake charmer (as your study has shown) would not constitute any threat to the species we are talking about as they are all very common and widely distributed.

My main suggestion for communities still dependent on wild animals is that for each community in each area, some imaginative brainstorming needs to be done with their collaboration. The idea of the Irula cooperative started in this way and the whole thing was six years in the making before it finally started working. What works for one community does not necessarily work for another. We all have a certain sympathy for people with livelihoods dependent on traditions and animals, but it is rapidly becoming impossible for such communities to continue, simply because either animals are getting scarce or their methods are unacceptable in today's animal welfare world.

SAFEGUARDING WILDLIFE BEYOND PROTECTED AREAS IN INDIA: A REVIEW OF LAWS, POLICIES AND OTHER CONSERVATION TOOLS

**Debadityo Sinha & **Mridhu Tandon*

ABSTRACT

India, a country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals. The wildlife in India is protected through protections granted to species as well as declaring an area as Protected Area (PA) under the Wildlife (Protection) Act, 1972 such as Wildlife Sanctuaries and National Parks. PAs are important tools to withstand the impacts of climate change and ensure long term conservation of natural resources providing food, clean water, shelter and income. However, they have their own limitations on account of their relatively small size and that the majority of wildlife habitats are now found outside the PAs. This accounts for the imperative need of according protection and identification of wildlife corridors and habitats outside the PAs. The article discusses the different forms of wildlife habitats and conservation areas found outside the PAs and how the existing laws and government actions lack in vigor and pose hurdles in effectively protecting forests and wildlife.

I. INTRODUCTION

India, a megadiverse country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals.¹ The wildlife in India is protected through protections granted to species as well as declaring their habitats as National Parks and Wildlife Sanctuaries under the Wildlife (Protection) Act, 1972 (“WPA”). As of December 2019, India could manage to declare 903 Protected Areas (“PAs”) covering 5.02% of the geographic area,

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¹ *India*, IUCN, available at <https://www.iucn.org/asia/countries/india>, last seen on 25/03/2021.

which includes 101 National Parks, 553 Wildlife Sanctuaries, 86 Conservation Reserves and 163 Community Reserves.² PAs are important tools to withstand the impacts of climate change and ensure long term conservation of natural resources which provide food, clean water, shelter and income.³ A well-managed PA Network not only provides enhanced protection and management of wildlife habitats but also plays an important role in preventing the transmission of zoonotic diseases.⁴ Studies indicate that 60% of the Emerging Infectious Diseases (Covid19, HIV, Ebola etc) that affect humans are zoonotic and approximately 72% of them originate in wildlife and are increasing significantly over time.⁵ However, the role of PAs in conserving wildlife habitats has its own limitations and they presently exist as islands of wilderness areas in a mosaic of human settlements, infrastructures, industries, roads, agricultural lands and forests.

II. NEED OF CONSERVATION EFFORTS BEYOND PROTECTED AREAS

Wildlife experts have pointed out that administrative boundaries of several PAs do not necessarily overlap with ecological boundaries and many of the areas within the PA boundary may not have any direct conservation value.⁶

⁷ It is now a well-proven fact that a majority of the wildlife habitats are found outside of these PAs, especially the state-owned Reserve/Protected Forests declared under Indian Forest Act, 1927 (“**IFA**”).⁸ With scientific advancements in wildlife survey techniques such as camera trapping and DNA analysis, such forests are now considered no less important wildlife

² *Protected Areas of India*, ENVIS Centre on Wildlife and Protected Areas, available at http://wiienviis.nic.in/Database/Protected_Area_854.aspx, last seen on 25/03/2021.

³ J.A. McNeely, *The role of protected areas for conservation and sustainable use of plant genetic resources for food and agriculture*, Bioversity International, available at https://www.bioversityinternational.org/fileadmin/bioversity/publications/Web_version/62/ch07.htm, last seen on 25/03/2021.

⁴ J. Terraube & Á. F. Llamazares, *Strengthening protected areas to halt biodiversity loss and mitigate pandemic risks*, NCBI PMC, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7525266/>, last seen on 25/03/2021.

⁵ K.E. Jones et. al., *Global trends in emerging infectious diseases*, NCBI PMC, available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5960580/>, last seen on 25/03/2021.

⁶ Ministry of Environment, Forest and Climate Change, Government of India, *India's National Wildlife Action Plan 2017-31*, available at https://wii.gov.in/images/documents/national_wildlife_action_plan/NWAP_Report_hi_Res_2017_31.pdf, last seen on 25/03/2021.

⁷ P.K. Mathur & P.R. Sinha, *Looking beyond Protected Area Networks: a Paradigm Shift in Approach for Biodiversity Conservation*, 10 International Forestry Review 305 (2008), available at <https://www.jstor.org/stable/43740344?seq=1>, last seen on 25/03/2021.

⁸ Supra 6.

habitat as compared to PAs. State owned forests outside PAs are known to support 36 endemic mammals of India.⁹ For instance, a significant population of the big carnivores such as Royal Bengal Tiger, Striped Hyena, Dhole, Sloth Bear, Grey Wolf, Golden Jackal are known to be found in areas outside the PAs in forests, shrublands and grasslands and use the same for their breeding and foraging activities.^{10 11} Wildlife experts and managers across the world now stress more on the importance of protecting the wildlife corridors and forest patches outside PAs which act as 'stepping stone habitat'-a habitat patch that facilitates movement between at least two other patches.^{12 13 14 15}

Another reason for the inadequacy of PAs in effectively conserving wildlife can also be attributed to their smaller size. Law enforcement agencies cannot force a wild animal possessing a special habitat requirement and home range to be restricted within the administrative boundaries of PA. Higher protection and better management of habitats within PAs have also resulted in many of the PAs exceeding their carrying capacities to accommodate any more wildlife population, eventually forcing the wild animals to disperse to other PAs and forests in search of suitable less crowded habitat. For example, the latest tiger census report¹⁶ indicates that

⁹ *Conservation Across Landscapes: India's Approaches to Biodiversity Governance*, Foundation for Ecological Security, available at <https://fes.org.in/studies/conservation-across-landscapes-india-approaches-to-biodiversity-governance.pdf>, last seen on 25/03/2021.

¹⁰ Ministry of Environment and Forestry, Government of India, *Status of Tigers Copredators & Prey in India 2018*, available at moef.gov.in/wp-content/uploads/2020/07/Tiger-Status-Report-2018-For-Web-compressed-compressed.pdf, last seen on 25/03/2021.

¹¹ *Melurs usursinus Sloth Bear Vulnerable*, IUCN, available at https://www.iucn.org/sites/dev/files/import/downloads/sloth_bear.pdf, last seen on 25/03/2021.

¹² S. Saura, Ö. Bodin & M.J. Fortin, *Stepping stones are crucial for species' long-distance dispersal and range expansion through habitat networks*, 51 *Journal of Applied Ecology* (2013), available at <https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.12179>, last seen on 25/03/2021.

¹³ N.E. Heller & E.S. Zavaleta, *Biodiversity management in the face of climate change: A review of 22 years of recommendations*, 142 *Biological Conservation* (2009), available at <https://www.sciencedirect.com/science/article/abs/pii/S000632070800387X>, last seen on 25/03/21; Meade Crosby, Joshua Tewksbury, Nick Haddad et al., *Ecological Connectivity for a Changing Climate*, 24 *Conservation Biology* (2010), available at https://www.researchgate.net/publication/47509070_Ecological_Connectivity_for_a_Changing_Climate, last seen on 25/03/2021.

¹⁴ D. Boscolo et al., *Importance of Interhabitat Gaps and Stepping-Stones for Lesser Woodcreepers (Xiphorhynchus fuscus) in the Atlantic Forest*, Departamento de Ecologia, available at ecologia.ib.usp.br/lepac/conservacao/Artigos/boscolo_inpress.pdf, last seen on 25/03/2021.

¹⁵ Supra 12.

¹⁶ Supra 10.

the present tiger population stands at 2,967 tigers which is 70% of the world population. While this is a significant achievement, the report also warns that 17 out of 50 tiger reserves are nearing their carrying capacity. In fact, nearly one-third of the country's tigers live outside protected areas. As carnivores spill out of protected areas, they will come in contact with human settlements, leading to an increase in human-wildlife conflicts¹⁷. As per Dr. Rajesh Gopal, Secretary, Global Tiger Forum, *“India’s tiger carrying capacity is packed, and the National Tiger Conservation Authority (NTCA) needs to focus on better landscape management.”*¹⁸

The average mean size of PAs in India is approx. 270 sq.km. and approx. 31% of them are less than 10 sq.km. in size.¹⁹ Some of the PAs are even less than 1 sq. km. such as Mangalavanam Bird Sanctuary in Kerala- 0.03 sq.km.²⁰ With 22% of land under forest cover and just 5% of the land under PA network, a large tract of such wildlife habitats in India still falls under Reserve/Protected Forests. However, the connectivity with such adjoining habitats is increasingly being obstructed due to various land use and land cover changes driven by human activities. This poses a serious problem for the conservation of Indian wildlife as animals that have evolved over a large, continuous landscape find it difficult to adapt to the increasing levels

¹⁷ Express News Service, *Tamil Nadu's 17 reserves at or close to full tiger capacity*, The New Indian Express (29/07/2020), available at <https://www.newindianexpress.com/states/tamil-nadu/2020/jul/29/tamil-nadus-17-reserves-at-or-close-to-full-tiger-capacity-2176127.html>, last seen on 25/03/2021; *A Home for Tiger*, The New Indian Express (30/07/2020), available at <https://indianexpress.com/article/opinion/editorials/tiger-population-india-reserves-capacity-6529840/>, last seen on 25/03/2021.

¹⁸ Express News Service, *Here's why experts are worried about the rising tiger population*, The New Indian Express (29/01/19), available at <https://www.newindianexpress.com/nation/2019/jan/29/tiger-numbers-up-experts-worried-1931306.html>, last seen on 25/03/2021.

¹⁹ *India's Forests*, 108 (Jagdish Kishwan et al., 2007).

²⁰ *Wildlife Sanctuaries*, ENVIS Centre on Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/wls_8230.aspx, last seen on 25/03/21.

of developmental pressure and human disturbances in areas outside the PAs.^{21 22 23}

Habitat loss and fragmentation of landscapes into smaller isolated patches are a major reason for the extinction of species worldwide.^{24 25 26} Such small and isolated patches of fragmented habitat endanger the faunal diversity as compared to larger and continuous fragments. Many of the species that originally inhabited large forested tracts will disappear from these isolated fragments.²⁷ Habitat loss and degradation is known to affect 89% of all threatened birds, 83% of mammals, and 91% of threatened plants globally.²⁸ There are also evidences that while some species can persist or thrive in fragmented landscapes, many species become more vulnerable because of their smaller populations,²⁹ more prone to over-exploitation (thereby increasing human-wildlife conflict)^{30 31} and their lower ability to adapt to rapid environmental change.^{32 33}

²¹ L. Tole, *Measurement and management of human-induced patterns of forest fragmentation: a case study*, 37 *Environment Management* (2007), available at <https://pubmed.ncbi.nlm.nih.gov/16583252/>, last seen on 25/03/21.

²² H. Olff & M.E. Ritchie, *Fragmented nature: consequences for biodiversity*, 25 *Journal of Landscape and Urban Planning* (2002), available at <https://research.rug.nl/en/publications/fragmented-nature-consequences-for-biodiversity>, last seen on 25/03/21.

²³ *Connectivity Conservation*, 29 (Kevin R. Cooks and M. Sanjayan, 14th ed., 2007).

²⁴ Michael R.W. Rands et al., *Biodiversity conservation: Challenges beyond 2010*, 329 (5997) *Science* 1298 (2010).

²⁵ Gary K. Meffe & Carl Ronald Carrol, *Principles of Conservation Biology* (2nd ed., 1997).

²⁶ Weidong, G. et al., *Estimating the consequences of habitat fragmentation on extinction risk in dynamic landscapes*, 17 *Landscape Ecology* 699 (2002); E.O. Wilson & R.H. MacArthur, *The Theory of Island Biogeography* (1967).

²⁷ L. Gibson et al., *Near-Complete Extinction of Native Small Mammal Fauna 25 Years After Forest Fragmentation*, 341 *Science* 1508-1510 (2013).

²⁸ *Species Extinction - The Facts*, IUCN Red List, available at https://www.iucn.org/sites/dev/files/import/downloads/species_extinction_05_2007.pdf, last seen on 25/03/2021.

²⁹ L. Cagnolo, M. Cabido & G. Valladeres, *Plant species richness in the Chaco Serrano Woodland from central Argentina: Ecological traits and habitat fragmentation effects*, 132(4) *Biological Conservation* 510–519 (2006), available at <https://doi.org/10.1016/j.biocon.2006.05.012>, last seen on 25/03/21.

³⁰ F Michalski. & C.A. Peres, *Anthropogenic determinants of primate and carnivore local extinctions in a fragmented forest landscape of southern Amazonia*, 124(3) *Biological Conservation* 383–396 (2005).

³¹ A.F. Bennett & D.A. Saunders, *Habitat fragmentation and landscape change*, 358 in *Conservation biology for all* (N.S. Sodhi& P.R. Ehrlich, 1st ed., 2010).

³² J.M.J. Travis, *Climate change and habitat destruction: A deadly anthropogenic cocktail*, 270(1514) *Proceedings of the Royal Society B: Biological Sciences* 467–473 (2003), available at <https://doi.org/10.1098/rspb.2002.2246>, last seen on 25/03/2021.

³³ Barry W. Brook, Navjot S. Sodhi & Corey J.A. Bradshaw., *Synergies among extinction drivers under global change*, 23(8) *Trends in Ecology and Evolution* 453–460 (2008), available at <https://doi.org/10.1016/j.tree.2008.03.011>, last seen on 25/03/2021.

Scientists are also worried about how wildlife would react to climate change induced events such as extreme weather events in the form of high temperatures, forest fires, exceptionally long drought and heavy rain falls.³⁴ There has been mass mortality of wildlife across the world owing to such extreme weather events such as the recent death of 23,000 Spectacled Flying Foxes in Australia in 2019 due to extreme heat waves wiping out one-third of its population.³⁵ The World Meteorological Organization has already declared the 2010-2020 as the warmest decade,³⁶ and another report indicates that 75% of Indian districts are under the influence of extreme weather events such as extreme droughts, floods, cyclones which are now becoming a regular phenomenon.³⁷ The capacity of wildlife to cope up with such impact of climate change induced weather events will depend greatly on their adaptability as well as their dispersal capacity for which ecosystems need to be healthy as well as sufficiently connected with neighboring habitats.

Thus, as stated by the World Bank's Staff Appraisal Report, "*PAs can be successful in realising their long-term conservation goals only when integrated into large-scale land-use planning activities and regulations at local and regional levels.*"³⁸ The National Wildlife Action Plan ("NWAP") 2002-2016 and 2017-31 suggested including 'Conservation Reserves' and 'Community Reserves' in human-dominated landscapes under the PA network and aimed for securing more of such stepping stone habitats outside PAs. The NWAP also emphasizes the identification of wildlife corridors and wildlife habitats

³⁴ *Impacts of Climate Change on Wildlife*, (R.E. Green, M. Harley, M. Spalding, C. Zockler, 2001).

³⁵ Jason Bittel, *A Heat Wave in Australia Killed 23,000 Spectacled Flying Foxes*, NRDC OnEarth (10/04/2019), available at <https://www.nrdc.org/onearth/heat-wave-australia-killed-23000-spectacled-flying-foxes>, last seen on 25/03/2021.

³⁶ U.N. World Meteorological Organisation, Press Release, *2020 on track to be one of three warmest years on record*, Press Release Number 02122020 (02/12/2020), available at [https://public.wmo.int/en/media/press-release/2020-track-be-one-of-three-warmest-years-record#:~:text=Geneva%2C%20%20December%202020%20\(WMO,to%20the%20World%20Meteorological%20Organization](https://public.wmo.int/en/media/press-release/2020-track-be-one-of-three-warmest-years-record#:~:text=Geneva%2C%20%20December%202020%20(WMO,to%20the%20World%20Meteorological%20Organization), last seen on 25/03/2021.

³⁷ 75% districts and half of India's population vulnerable to extreme climate events, CEEW, available at <https://www.ceew.in/press-releases/75-districts-and-half-india%E2%80%99s-population-vulnerable-extreme-climate-events-ceew-study>, last seen on 25/03/2021.

³⁸ Ruchi Badola, *Local People Amidst the Changing Conservation Ethos: Relationships between People and Protected Areas in India*, in *Decentralization and Devolution of Forest Management in Asia and the Pacific* (Enters, T., Durst, P.B., and M. Victor, 2000).

outside PAs for the long-term survival of wildlife.³⁹ However, the protection of wilderness areas is not that simple and it is affected not just by laws but how effectively we understand the species requirements, ecosystem functions and the capacity to address key conservation challenges on ground.

In the next section, we have discussed different legal provisions, policies and global recognitions which influence protection of areas rich in wildlife outside the PAs.

III. LEGISLATIONS FOR PROTECTION OF WILDERNESS AREAS

1. Indian Forest Act, 1927

The Indian Forest Act, 1927 provides for establishment of Reserved Forests and Protected Forests, where the former is the most restricted category of forests. Reserved Forest enjoys full degree of protection as all activities are prohibited unless permitted. On the other hand, Protected Forest enjoys a limited degree of protection where all activities are permitted unless prohibited. The Act empowers state Forest Departments to take over, manage and protect these categories of forests.⁴⁰

The IFA was promulgated by the British Government for the primary purpose of timber and softwood production, and thereby revenue generation.⁴¹ The primary focus areas of IFA are categorization of forests into Reserved and Protected Forests, the procedure to be followed for their declaration, definition of forest offence, acts prohibited within Reserved and Protected forests, penalties for violation, transit of timber and other forest produce, and duty that can be levied on timber and other forest

³⁹ Ministry of Environment and Forests, Government of India, *National Wildlife Action Plan 2002-2016*, (2007), available at <http://wiienviis.nic.in/WriteReadData/UserFiles/file/NATIONAL%20WILDLIFE%20ACTION%20PLAN.PDF>, last seen on 27/03/2021.

⁴⁰ Sharachchandra Lele, *Thematic Essay: Understanding Current Forest Policy Debates through Multiple Lenses: The Case of India*, 23 *Ecology, Economy and Society – the INSEE Journal* (2019), available at https://www.researchgate.net/publication/337469190_THEMATIC_ESSAY_Understanding_Current_Forest_Policy_Debates_through_Multiple_Lenses_The_Case_of_India, last seen on 25/03/2021.

⁴¹ Ibid.

produce.⁴² Conservation and management of wildlife and their habitats does not feature within the various sections and chapters of IFA. The Working Plans of those Forest Divisions which are recognized as important for wildlife conservation and serve as animal corridors have considerations and prescriptions for protection of wildlife. However, the efforts for management of wildlife habitats in such state-owned forests do not match the resource and protection enjoyed by PAs notified under WPA.

2. Wildlife (Protection) Act, 1972

National Park & Wildlife Sanctuary

The WPA is the primary legislation for protection of wildlife and their habitats by declaring areas of significant ecological, floral and faunal value as National Parks and Wildlife Sanctuaries. The former enjoys the highest degree of legal protection where no form of human activity is allowed, whereas the latter allows for limited use.⁴³ For example, grazing of livestock is prohibited in the National Parks but the same can be allowed in a regulated manner within Sanctuaries.⁴⁴ The Chief Wildlife Warden within the State Forest Department is responsible for the management of the national parks and wildlife sanctuaries.⁴⁵

Conservation & Community Reserves

Areas which are rich in flora and fauna but also have significant human presence are protected as 'Conservation Reserve' and 'Community

⁴² Farida Tampil, *Introduction to Indian Forest Act, 1927 Indian Forest (Conservation) Act, 1980 & Wildlife (Protection) Act, 1972*, 12-13 (2013), available at <http://www.mcrhrdi.gov.in/88fc/week-8/Law-IndianForest%20Act.pdf>, last seen on 25/03/2021.

⁴³ M.G. Harihar et al., *Protected Areas and Biodiversity Conservation in India*, 237 Biological Conservation 114-124 (2019), available at <https://doi.org/10.1016/j.biocon.2019.06.024>, last seen on 25/03/2021.

⁴⁴ S. Edake, *The protected area network of India*, The Energy and Resources Institute (TERI), available at <https://www.teriin.org/opinion/protected-area-network-india>, last seen on 25/03/2021; Ss. 33 (d) & 35 (7), The Wildlife (Protection) Act, 1972.

⁴⁵ Ss. 33 & 35(8), The Wildlife (Protection) Act, 1972; Shekar Dattatri, *The Institutional Framework for Wildlife Conservation in India*, Conservation India, available at <https://www.conservationindia.org/resources/the-institutional-framework-for-wildlife-conservation-in-india#:~:text=The%20Ministry%20of%20Environment%20%26%20Forests,and%20forestry%20policies%20and%20programmes,> last seen on 25/03/2021.

Reserve’- new PA categories inserted by amendment in the WPA in 2002.⁴⁶ Conservation Reserves are established on public land⁴⁷ and are managed by Conservation Reserve Management Committee which consists of representatives from State Forest Department, Agriculture and Animal Husbandry Department, Village Panchayat and Conservation NGOs.⁴⁸ Community Reserves, on the other hand are established on private land⁴⁹ and are managed by Community Reserves Management Committee which consists of representative from Village Panchayat and State Forest Department.⁵⁰ Land use change within Conservation and Community Reserve is regulated by the management plan approved by their respective management committee.

Tiger Reserves

The Government of India in 1973 launched a Centrally Sponsored Scheme, the ‘Project Tiger’ with the objective to maintain a viable tiger population in the country. The scheme called for creation of reserves with an average of 1500 sq.km. for conserving tiger habitat, its prey base and other flora and fauna.⁵¹ Initially, nine reserves were created under Project Tiger, however, none of these areas enjoyed any protection under the WPA. It was only after the 2006 Amendment in the Act that Tiger Reserves got a legal conservation status.⁵² Under the wildlife law, every tiger reserve includes a core or critical tiger habitat (“CTH”) and a buffer or peripheral area. CTH are areas of National Parks and Wildlife Sanctuaries which on the basis of scientific criteria are kept inviolate for tiger conservation. The buffer area consists of the area peripheral to the CTH with a lesser degree of habitat protection.⁵³ Tiger Reserves are managed by the State Forest Department on the basis of a Tiger Conservation Plan approved by the

⁴⁶ S. 3(j), The Wildlife (Protection) Amendment Act, 2002.

⁴⁷ S. 36 A (1), The Wildlife (Protection) Act, 1972.

⁴⁸ S. 36 B, The Wildlife (Protection) Act, 1972.

⁴⁹ S. 36 C (1), The Wildlife (Protection) Act, 1972.

⁵⁰ S. 36 D, The Wildlife (Protection) Act, 1972.

⁵¹ Ministry of Environment & Forests (Project Tiger), Government of India, *The Report of the Tiger Task Force: Joining the Dots*, available at https://ntca.gov.in/assets/uploads/Reports/Joining_the_dot.pdf, last seen on 25/03/2021.

⁵² S. 2, The Wildlife (Protection) Amendment Act, 2006.

⁵³ S. 38 V (4), The Wildlife (Protection) Act, 1972.

National Tiger Conservation Authority (“NTCA”).⁵⁴ Constituted under the WPA, NTCA is the nodal authority for tiger conservation in India. Headed by the Minister in-charge of the Ministry of Environment, Forest and Climate Change (“MoEFCC”),⁵⁵ the NTCA has the power to disallow any ecologically unsustainable land use such as mining, industry within tiger reserves.⁵⁶ Recommendation of NTCA and prior approval of National Board for Wildlife is required for diverting tiger reserves and areas linking tiger reserves and protected areas for ecologically unsustainable activities.⁵⁷ Presently, there are 50 tiger reserves in the country spread over an area of 71,027.10 sq.km.⁵⁸

3. Biological Diversity Act, 2002

India’s Biological Diversity Act, 2002 grants state government the power to notify (in consultation with local bodies) areas of biodiversity importance as Biodiversity Heritage Sites (“BHS”).⁵⁹ These sites are well-defined areas that are unique, ecologically fragile and can be terrestrial, coastal or spread over inland/marine waters.⁶⁰ BHSs are endowed with rich wildlife as well as domesticated species and are characterized by high endemism, presence of rare and threatened species, keystone species and species of evolutionary significance.⁶¹ The basic purpose behind the BHS provision is to cover, as far as possible, those sites that are not covered under the PA Network of the WPA.⁶²

Unlike National Parks and Wildlife Sanctuaries where resource use practices of local communities are either prohibited or strictly regulated, the BHS provision does not necessarily put such restrictions, other than

⁵⁴ Ss. 38 V (3) & 38 O (a), The Wildlife (Protection) Act, 1972.

⁵⁵ S. 38 L (2) (a), The Wildlife (Protection) Act, 1972.

⁵⁶ S. 38 O (b), The Wildlife (Protection) Act, 1972.

⁵⁷ S. 38 O (g), The Wildlife (Protection) Act, 1972. (exception is given in case of public interest)

⁵⁸ *Tiger Reserves*, ENVIS Centre on Wildlife and Protected Areas, available at http://wiienvs.nic.in/Database/trd_8222.aspx, last seen on 25/03/2021.

⁵⁹ S. 37 (1), The Biological Diversity Act, 2002.

⁶⁰ S. 3.1., Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.

⁶¹ Ibid.

⁶² S. 4.6., Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.

those voluntarily decided by them.⁶³ The State Government (in consultation with Central Government) has the power to frame rules for the management and conservation of heritage sites.⁶⁴

4. Environment (Protection) Act, 1986

The Environment (Protection) Act, 1986 (“EPA”) grants MoEFCC the power to take measures which it feels necessary to improve environmental quality and control environment pollution.⁶⁵ The Rules framed under the EPA grants Ministry the power to restrict location of industries and their operations for considerations such as biological diversity of the area, maximum allowable limits of concentration of pollutants for an area and need for environmentally compatible land use.⁶⁶ Using these provisions, the Central Government has identified and notified Eco-Sensitive Zones (“ESZs”) and Ecologically Sensitive Areas (“ESAs”). The powers granted under the EPA were also used to conserve and protect the unique environment of coastal stretches and marine areas. Using the same provisions, the Government notified the Coastal Regulation Zone Notification to conserve the coastal and marine area of the country. Lastly, the Wetland (Conservation and Management) Rules, 2019 were propagated under the EPA to extend legal protection to wetland ecosystems across the country.

Eco-sensitive Zones

Eco-sensitive zones are areas, extending up to 10 km, notified around national parks and Wildlife Sanctuaries.⁶⁷ The idea behind declaring ESZs was to create shock absorbers around PAs where development and industrial activities are regulated before it spills into an industrial urban area with severe anthropogenic pressures.⁶⁸ ESZs also act as transition zones

⁶³ S. 2.7, Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.

⁶⁴ S. 37(2), The Biological Diversity Act, 2002.

⁶⁵ S. 3, The Environment (Protection) Act, 1986.

⁶⁶ Rule 5(1), The Environment (Protection) Rules, 1986.

⁶⁷ Perna Singh Bindra, *The Vanishing: India's Wildlife Crisis*, 279 (1st ed., 2017).

⁶⁸ Ibid.

from areas of high protection to areas with lesser protection.⁶⁹ The concept of ESZs took shape during the 21st meeting of the Indian Board for Wildlife where the Wildlife Conservation Strategy-2002 was adopted. The strategy called for notifying areas within 10 km radius around sanctuaries and national parks as ecologically fragile zones.⁷⁰

It is important to remember that the purpose of an ESZ goes beyond being a buffer around the protected areas. These zones must also include migratory routes and corridors used by wildlife to move from one protected area to another. The NWAP (2002-2016) identified areas outside protected areas as *vital ecological corridor links* which must be protected to prevent isolation of fragments of biodiversity. The Plan called for notifying area around protected areas and wildlife corridors as ecologically fragile zones under Environment (Protection) Act, 1986.⁷¹ To date, ESZs of 303 protected areas have been notified by the Central Government.⁷²

The Supreme Court in the matter of *Goa Foundation v. Union of India*⁷³ passed important orders in the context of identification and notification of ESZs,⁷⁴ with most important being the projects which have been given environmental clearance within the 10 km zone of national parks or wildlife sanctuaries before the declaration of ESZs would have to be referred to the standing committee of the National Board for Wildlife for further permission.⁷⁵

Ecologically Sensitive Areas

ESAs are declared under similar provisions as ESZs. Unlike ESZs which are site-specific and restricted to one individual PAs, ESAs are larger areas,

⁶⁹ S. 3, Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.

⁷⁰ S. 1.1, Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.

⁷¹ S. 1.2., Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.

⁷² *Status of ESZ Notifications*, Ministry of Environment, Forest & Climate Change, available at <http://moef.gov.in/en/rules-and-regulations/esz-notifications-2/>, last seen on 25/03/2021.

⁷³ *Goa Foundation v. Union of India*, (2011) 15 SCC 791.

⁷⁴ S. Kuriakose, *Supreme Court on Wildlife Conservation Kaziranga-Karbi Anglong Landscape*, Vidhi Centre for Legal Policy, available at <https://vidhilegalpolicy.in/wp-content/uploads/2020/12/Case-Brief-Wildlife-Corridors-Kaziranga-VCLP-Dec-2020.pdf>, last seen on 26/03/2021.

⁷⁵ *Supra* 73.

aimed at landscape level conservation. ESAs aims to safeguard ecologically fragile areas through land use planning against ecologically destructive activities such as mining and quarrying, thermal power plants, industry, building and construction etc.⁷⁶ Till now, the MoEFCC has notified Western Ghats, Dahanu Taluka, Doon Valley, Bhagirathi river stretch, Mahabaleshwar-Panchgani, Matheran and Mount Abu as ESAs.⁷⁷

Coastal Regulation Zones

The Coastal Regulation Zone (“**CRZ**”) Notification issued under the EPA seeks to regulate industrial development and operations in CRZ areas. The definition of CRZ includes the land area from High Tide Line (“**HTL**”) to 500 meters on the landward side; the land between HTL to 50 meters or width of the creek; the land area between HTL and Low Tide Line (“**LTL**”) known as the intertidal zone and the water and the bed area between the LTL to the territorial water limit (12 nautical miles) in case of the sea, and water and the bed area between the LTL at the bank to the LTL on the opposite side of the bank, of tidal influenced water bodies.⁷⁸ The CRZ is classified into four zones-CRZ-I, CRZ-II, CRZ-III, and CRZ-IV where each zone has its own set of restrictions on industrial processes and operations. The Notification prohibits a certain set of activities across all zones such as setting up of new industries, manufacture, and handling of hazardous substances, dumping of solid waste, discharge of untreated waste, and land reclamation (except for permissible activities executed with prior approval).⁷⁹ Besides the four zones, the CRZ Notification also identifies certain coastal areas for special consideration for protection. These include the Critically Vulnerable Coastal Areas, Inland Backwaters and islands along the mainland coast, and CRZ falling within municipal limits of Greater Mumbai.

The primary responsibility for the implementation and enforcement of CRZ Notification lies with the State Government and State Coastal Zone

⁷⁶ Supra 67.

⁷⁷ *ESA Notifications*, Ministry of Environment, Forest, and Climate Change, available at <http://moef.gov.in/en/rules-and-regulations/esa-notifications/>, last seen on 25/03/2021.

⁷⁸ *The Coastal Regulation Zone Notification* 2019.

⁷⁹ S. 4, *The Coastal Regulation Zone Notification* 2019.

Management Authority (“**SCZMA**”). SCZMA has been constituted by the Central Government in every coastal state and enjoys powers such as taking measures for protection and improvement of environment, issuing directions for closure of industrial units, prohibiting and regulating activities and prosecution of offenders of CRZ Notification.⁸⁰

Legal Protection to Wetlands

The MoEFCC notified the Wetland (Conservation and Management) Rules, 2017 with the objective to provide a legal framework for the conservation and sustainable use of wetland ecosystems.⁸¹ In order to qualify for the protection, a wetland needs to be a Ramsar Site or a wetland notified by a state or union territory government, or the Central government in the case of transboundary wetlands.⁸² Rule 4 prohibits ecologically destructive activities such as conversion of wetland to support encroachment, construction, industrial siting or expansion, manufacture and handling of hazardous waste, solid waste dumping, effluent disposal and poaching.

For its implementation, the Wetland Rules provide for constitution of the National Wetlands Committee (at the Central Government level) which is headed by the Secretary, MoEFCC.⁸³ The Committee advises the Central Government on policies and programs for the conservation of wetlands and is responsible for monitoring the implementation of Rules.⁸⁴ At the state level, the Rules provide for constitution of State Wetland Authority which is headed by the Minister in charge of the State Department of Environment and Forests.⁸⁵ The Authority is responsible for preparation

⁸⁰ M. Gopal, *Sea of Regulations – Protecting The Coastal Commons in India (Analysis) – Part II*, NLUO Blog For Animal and Environmental Jurisprudence and Rights, available at <https://saawnluo.in/2020/09/14/sea-of-regulations-protecting-the-coastal-commons-in-india-analysis-part-ii/>, last seen on 25/03/2021.

⁸¹ The Wetland Rules define wetland under Section 2(g) as an area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.

River Channels, paddy fields, human-made water bodies tanks constructed for drinking water and structures constructed for aquaculture, salt production, recreation and irrigation are not included in the above definition.

⁸² Rules 3, 7(3) & 7(4), Wetland (Conservation and Management) Rules, 2017.

⁸³ Rule 6(1), Wetland (Conservation and Management) Rules, 2017.

⁸⁴ Rule 6(3), Wetland (Conservation and Management) Rules, 2017.

⁸⁵ Rule 5(1), Wetland (Conservation and Management) Rules, 2017.

of list of wetlands to be notified and based on their recommendation, the State Government notifies the wetland in the Official Gazette.⁸⁶ The Authority is also required to develop a list of regulated and permitted activities within the notified wetlands⁸⁷ and has the power to modify the list of prohibited activities.⁸⁸ Lastly, the State Wetland Authorities are also responsible for reviewing the integrated management plan for each notified wetland,⁸⁹ and its implementation can only begin after receiving the Authority's endorsement.⁹⁰

IV. GOVERNMENT RECOGNITIONS TO IMPORTANT WILDERNESS AREAS

1. Elephant Reserves

The Government of India in 1991-92 launched a 100% Centrally Sponsored Scheme the 'Project Elephant' with the objective to conserve a viable population of wild elephants in their natural habitats. The scheme also aimed towards restoration and conservation of corridors and movement paths used by elephants and to address the issue of man-elephant conflict.⁹¹ The need for Project Elephant was considered keeping in mind the elephant's non-territorial behavior and large home range requirements. The Scheme recognizes that elephant conservation cannot be restricted to management of small section of forests and that migratory routes and corridors used by elephants are an ecological necessity for their survival.⁹²

⁸⁶ Rule 5(4) (b), Rule 7(2) & Rule 7(3), Wetland (Conservation and Management) Rules, 2017.

⁸⁷ Rule 5(4) (e), Wetland (Conservation and Management) Rules, 2017.

⁸⁸ Rule 5(4) (f), Wetland (Conservation and Management) Rules, 2017.

⁸⁹ Rule 5(4) (h), Wetland (Conservation and Management) Rules, 2017.

⁹⁰ Ministry of Environment, Forest & Climate Change, Government of India, *Guidelines for implementing Wetlands (Conservation and Management) Rules*, 2017, available at moef.gov.in/wp-content/uploads/2020/01/final-version-and-printed-wetland-guidelines-rules-2017-03.01.20.pdf, last seen on 25/03/2021.

⁹¹ *Introduction to Project Elephant*, Ministry of Environment, Forest & Climate Change, available at <http://moef.gov.in/en/division/forest-divisions-2/project-elephant-pe/introduction/>, last seen on 25/03/2021.

⁹² S. 2, Revised Guidelines for Implementation of Works under Centrally Sponsored Scheme- Project Elephant During XII Plan, 2013.

In order to strengthen elephant conservation, various elephant range states in the country have notified Elephant Reserves. These reserves encompass wildlife sanctuaries, national parks, other protected areas, forests under various legal categories and even private lands. Presently, there are 32 Elephant Reserves in the country spread over an area of 65,000 km².⁹³

The MoEFCC Report titled *Gajah: Securing the Future for Elephants in India* considers Elephant Reserves as the basic management unit for focused elephant conservation in the country.⁹⁴ However, despite their importance, these reserves do not enjoy any legal protection under the WPA. National Parks and Wildlife Sanctuaries cover less than 30% of the total Elephant Reserve area⁹⁵ and the remaining area does not enjoy the legal conservation status under the Wildlife Law.

2. Biosphere Reserves

Biosphere Reserves are area of terrestrial, marine and coastal ecosystems that are internationally recognized under UNESCO's Man and Biosphere ("MAB") Programme.⁹⁶ The underlying thrust of the Biosphere Reserve scheme is to reconcile conservation of biodiversity and economic and social development through alternate livelihood provisions and maintenance of cultural values. Special focus has been laid on the co-existence of people and nature.⁹⁷ Every Biosphere Reserve is demarcated into three zones viz. core, buffer and transition. Core one is strictly protected for the conservation of biodiversity and is kept free from all human presence external to the system. The buffer adjoins or surrounds

⁹³ N. Thomas, *Chapter 1: Elephant Conservation in India*, 1 Trumpet Quarterly Journal 1, 10 (July-September 2020), available at <http://moef.gov.in/wp-content/themes/moef-green/ebook/Trumpet/index.html>, last seen on 25/03/2021.

⁹⁴ Ministry of Environment & Forests, Government of India, *The Report of the Elephant Task Force 2010*, available at <http://moef.gov.in/wp-content/uploads/2019/08/04-Gajah-final.pdf>, last seen on 25/03/2021.

⁹⁵ Ibid.

⁹⁶ Ministry of Environment & Forests, Government of India, *Conservation of Natural Resources including Forestry and Wildlife*, available at <http://moef.gov.in/wp-content/uploads/report/0203/chap-03.pdf>, last seen on 25/03/2021.

⁹⁷ *Presentation by Dr. R. Dalvani at the 4th World Congress on Biosphere Reserves (SACAM side event)*, 4th World Congress on Biosphere Reserves Lima, Peru, March 14- March 18, 2006, UNESCO available at http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/images/04_4WCBR_Presentation.pdf, last seen on 26/03/2021.

the core where ecological compatible activities such as environmental education, recreation, ecotourism, and applied basic research are permitted. The Transition Zone is the outermost zone of the Biosphere Reserve which contains a variety of agricultural activities, settlements and other uses.⁹⁸ Data maintained by Wildlife Institute of India indicates that there are 18 Biosphere Reserves in India.⁹⁹

The MoEFCC provides financial assistance to the State Governments for the conservation and management of Biosphere Reserves. For its governance, the MAB Programme consists of the Indian National MAB Committee, State Level Steering Committees and Local Level Committee. The National Committee advises the MoEFCC on the policy and program formation for Biosphere Reserves and lays down guidelines for preparation of management actions plans for the reserves. The State Level Committee examines the management plans and makes recommendations for financial assistance. Lastly, the Local Level Committee coordinates activities of various government line departments and recommends interventions in the management plan. However, the Biosphere Reserves as a whole are not backed by any legislation.

3. Important Coastal and Marine Biodiversity Areas

The Aichi Biodiversity Targets signed under the Convention on Biological Diversity (“CBD”) had called for conserving at least 10% of coastal and marine areas in networks of protected areas.¹⁰⁰ The Targets also required restoration and safeguarding ecosystems that provide water, health, livelihoods and well-being. For India to achieve these targets, the Wildlife Institute of India had identified 107 coastal and marine sites and prioritized them as Important Coastal and Marine Biodiversity Areas (ICMBAs).¹⁰¹

⁹⁸ *Zoning Schemes*, Ecological Sciences for Sustainable Development, available at <http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics/zoning-schemes/>, last seen on 25/03/2021.

⁹⁹ *Biosphere Reserves*, ENVIS Centre of Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/br_8225.aspx, last seen on 25/03/2021.

¹⁰⁰ *Aichi Biodiversity Targets*, Convention on Biological Diversity, available at <https://www.cbd.int/sp/targets/>, last seen on 25/03/2021.

¹⁰¹ *Important Coastal and Marine Biodiversity Areas*, ENVIS Centre of Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/ICMBAs_8247.aspx, last seen on 11/05/2021.

These sites are proposed to be legally protected as Conservation Reserves or Community Reserves (under WPA).¹⁰²

4. Project Snow Leopard

The Project Snow Leopard (“PSL”) was launched in July 2006 by the government of India an initiative similar to Project Tiger and Project Elephant with the purpose of landscape conservation to protect the ecosystems of wild animals found in high altitude ecosystems using Snow Leopards as a flagship species through participatory policies and actions.¹⁰³

¹⁰⁴ The Project is designed for all biologically important habitats within the Snow Leopard’s range, irrespective of the ownership. Consequently, the project area will extend to protected areas as well as areas outside the protected area network. Three landscapes namely, Hemis-Spiti across Ladakh and Himachal Pradesh; Nanda Devi – Gangotri in Uttarakhand; and Khangchendzonga – Tawang across Sikkim and Arunachal Pradesh are identified to be conserved under the PSL program.¹⁰⁵

V. GLOBAL RECOGNITIONS TO IMPORTANT WILDERNESS AREAS

A database of global biodiversity hotspots is maintained by several reputed conservation organizations. Such areas are recognized following a robust process backed by highly credible scientific research. While these recognitions may or may not be backed by a legal mandate or intergovernmental treaty, inclusion of any area under some of these databases have significant influence on the conservation policies, monitoring efforts and greater financial support to manage such areas.

¹⁰² K. Sivakumar, V.B. Mathur & A. Pande, *Chapter 2: Coastal and Marine Protected Areas in India: Challenges and Way Forward*, in *ENVIS Bulletin on Coastal and Marine Protected Areas in India: Challenges and Way Forward* 50-63 (K. Sivakumar, 15th ed., 2014).

¹⁰³ *The Launch of India’s Project Snow Leopard*, Snow Leopard Network, available at <https://snowleopardnetwork.org/2006/07/01/the-launch-of-indias-project-snow-leopard/>, last seen on 26/03/2021.

¹⁰⁴ Ministry of Environment & Forests, Government of India, *The Project Snow Leopard 2008*, available at <http://moef.gov.in/wp-content/uploads/2018/03/Project-Snow-Leopard-2008.pdf>, last seen on 26/03/2021.

¹⁰⁵ *Government committed to landscape restoration for snow leopard habitat conservation. States together with the Centre should resolve to bring up the population of snow leopards in the next five years*, Press India Bureau Delhi, available at <https://pib.gov.in/PressReleasePage.aspx?PRID=1667118>, last seen on 26/03/2021.

Such recognitions also facilitate documentation of biodiversity and declaration of new protected areas by the governments.

1. Wetlands of International Importance: The Ramsar Convention

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (also known as Ramsar Convention) is an intergovernmental treaty for national and international action on conservation and wise use of wetlands and its resources.¹⁰⁶ The convention was adopted in 1971 at Ramsar, Iran and came into force in India on February 01, 1982.¹⁰⁷ The convention recognizes the ecological importance of wetlands as regulators of water regime and providers of habitat for various flora and fauna, especially waterfowl and strives to reduce the encroachment and consequent loss of wetlands.¹⁰⁸ The Parties to the Convention are required to designate suitable wetlands within their territorial jurisdiction for inclusion in the *List of Wetlands of International Importance*. These wetlands are also known as Ramsar Sites and are selected based on their international ecological, botanical, zoological or hydrological significance, with priority given to those which are of international importance to waterfowl at any season.¹⁰⁹ To qualify as a Ramsar site, the identified site must meet nine criteria defined under two broad categories viz. presence of representative, rare or unique wetland type and international significance for biodiversity conservation.¹¹⁰ As of date, India has designated 42 Ramsar sites spread over an area of 10,814.38 km².¹¹¹ Inclusion of wetlands in the Ramsar site confers upon it the prestige of international recognition and embodies the government's commitment to maintenance of the ecological character of the site.¹¹² Ecological

¹⁰⁶ *About the Ramsar Convention*, Ramsar, available at <https://www.ramsar.org/>, last seen on 26/03/2021.

¹⁰⁷ *Country Profile: India*, Ramsar, available at <https://www.ramsar.org/wetland/india>, last seen on 26/03/2021.

¹⁰⁸ Preamble, Convention on Wetlands of International Importance especially as Waterfowl Habitat, Preamble, 1971.

¹⁰⁹ Art. 2, Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971.

¹¹⁰ *An Introduction to the Ramsar Convention on Wetlands*, 41 (5th ed., 2016).

¹¹¹ *Supra* 107.

¹¹² *Supra* 110.

character refers to processes and components which make the wetland a particular, and sometimes unique, ecosystem.¹¹³ After its designation in the Ramsar List, any change in the ecological character of the wetland due to human interference, pollution or technological development must be reported without delay to the Ramsar Secretariat.¹¹⁴

2. Important Bird and Biodiversity Areas

BirdLife International's Important Bird and Biodiversity Areas (“IBAs”) are sites of international significance for the conservation of the world's birds and other biodiversity. The sites also provide essential benefits to people such as food, materials, water, climate regulation and flood protection.¹¹⁵ Originally, IBAs were called Important Bird Areas, but in June 2014, it was changed to Important Bird and Biodiversity Areas to reflect the biodiversity significance of these sites.¹¹⁶ The sites are identified using four internationally agreed criteria based upon globally threatened species, groups of species with a restricted range, species assemblages confined to a single biome, and congregations of one or more species.¹¹⁷ In India, Bombay Natural History Society (BNHS) along with Bird Life International has identified 554 IBAs covering an area of 194,157.98 km².¹¹⁸ These conservation sites support 1,212 species of birds¹¹⁹ and are spread across a range of habitats such as wetlands, mudflats, grasslands and scrublands making them excellent indicators of biodiversity richness.¹²⁰ IBAs are monitored using regular assessments wherein each IBA is scored

¹¹³ Neha Sinha, *Reconsider the Rules: on 2017 Wetland Rules*, The Hindu (21/12/2017), available at <https://www.thehindu.com/opinion/op-ed/reconsider-the-rules/article22085813.ece>, last seen on 26/03/2021.

¹¹⁴ Arts. 3 & 8, Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971.

¹¹⁵ BirdLife International, *Important Bird and Biodiversity Areas: A global network for conserving nature and benefiting people* (2014), available at <http://datazone.birdlife.org/userfiles/file/IBAs/pubs/SOWIBAs2014.pdf>, last seen on 26/03/2021.

¹¹⁶ Zoltan Waliczky et al., *Important Bird and Biodiversity Areas (IBAs): their impact on conservation policy, advocacy and action*, 29 Bird Conservation International 199-215 (2019), available at <https://doi.org/10.1017/S0959270918000175>, last seen on 26/03/2021.

¹¹⁷ Supra 115.

¹¹⁸ India, Bird Life International Data Zone, available at <http://datazone.birdlife.org/country/india/resources>, last seen on 26/03/2021.

¹¹⁹ Ibid.

¹²⁰ Ministry of Environment & Forests, Government of India, *India's Fifth National Report to the Convention on Biological Diversity 2014*, available at <https://www.cbd.int/doc/world/in/in-nr-05-en.pdf>, last seen on 26/03/2021.

on their state (condition of birds and their habitats), pressures (threats that impact them) and conservation responses (action plans and management activities).¹²¹

3. Key Biodiversity Areas

The International Union for Conservation of Nature (IUCN) defines Key Biodiversity Areas (“KBAs”) as “*sites that contribute significantly to the global persistence of biodiversity, in terrestrial, marine and freshwater ecosystems*”.¹²² KBAs support critical populations of the world's threatened species and mapping and subsequent protection of KBAs can ensure the conservation of largest and important populations of these species, giving them a real chance of survival. In addition to species population, the KBA criteria also consider their ecosystems or habitats and identify them by the unique collection of species they sustain. Their conservation would therefore ensure simultaneous survival of many species.¹²³ The KBA Standard developed by IUCN identifies KBAs based on 11 criteria defined under five broad categories viz. “*threatened biodiversity, geographically restricted biodiversity, ecological integrity, biological processes and very high irreplaceability*”.¹²⁴ The IUCN has identified 531 KBA sites in India.¹²⁵

¹²¹ BirdLife International, *Important Bird and Biodiversity Areas: A global network for conserving nature and benefiting people* (2014), available at <http://datazone.birdlife.org/userfiles/file/IBAs/pubs/SOWIBAs2014.pdf>, last seen on 26/03/2021; India, Bird Life International Data Zone, available at <http://datazone.birdlife.org/country/india/resources>, last seen on 26/03/2021.

¹²² *Key Biodiversity Areas*, IUCN, available at <https://www.iucn.org/regions/mediterranean/our-work/biodiversity-knowledge-and-action/biodiversity-standards-and-indicators/key-biodiversity-areas>, last seen on 26/03/2021.

¹²³ *Saving Nature, Key Biodiversity Areas*, available at <http://www.keybiodiversityareas.org/about-kbas/saving-nature>, last seen on 26/03/2021.

¹²⁴ KBA Standards and Appeals Committee, *Guidelines for using A Global Standard for the Identification of Key Biodiversity Areas* (2020), available at <https://portals.iucn.org/library/sites/library/files/documents/2020-033-En.pdf>, last seen on 26/03/2021.

¹²⁵ *Key Biodiversity Areas*, ENVIS Centre on Wildlife and Protected Areas, available at [http://wiienvis.nic.in/Database/Key Biodiversity Areas 8647.aspx](http://wiienvis.nic.in/Database/Key%20Biodiversity%20Areas%208647.aspx), last seen on 26/03/2021.

4. Alliance for Zero Extinction Sites

The Alliance for Zero Extinction (“AZE”) is a worldwide consortium of global biodiversity conservation organisations with the aim to prevent species extinction. To achieve the same, the Alliance identifies and safeguards sites which are the last remaining refuges of one or more Endangered or Critically Endangered Species.¹²⁶ In order to qualify as an AZE Site, all three criteria viz. *endangerment*, *irreplaceability* and *discreteness* need to be satisfied.¹²⁷ Conservation of AZE sites has been considered as essential to achieve the CBD target of preventing extinctions of known species. Their protection has been included as a critical piece of the CBD.¹²⁸

VI. SACRED GROVES

Sacred Groves (“SGs”) are the relic forest segments preserved in the name of religion and culture.¹²⁹ SGs can range from few trees to forests of several acres. They include a wide range of ecosystems such as evergreen forests, hill forests, swamp forests, mangroves, deserts and acts as habitat of several unique wildlife.¹³⁰ Such forests enjoy social protection from local communities and are often associated with worshipping places of local folk deities or tree spirits. These spaces are protected by local communities because of their religious beliefs and traditional rituals that run through several generations. Thus, these SGs enjoy natural protection from human exploitation and have evolved as areas of high flora and fauna diversity.

¹²⁶ *Partner List*, Alliance for Zero Extinction, available at <https://zeroextinction.org/the-alliance/partner-list/>, last seen on 26/03/2021.

¹²⁷ *AZE Site Criteria*, Alliance for Zero Extinction, available at <https://zeroextinction.org/site-identification/aze-site-criteria/>, last seen on 26/03/2021.

¹²⁸ Stephan M. Funk et al., *Meeting the Aichi targets: Pushing for zero extinction conservation*, 46 *Ambio* 443-455 (2017), available at <https://link.springer.com/content/pdf/10.1007/s13280-016-0892-4.pdf>, last seen on 26/03/2021.

¹²⁹ Sushma Singh et al., *Sacred Groves: Myths, Beliefs, and Biodiversity Conservation—A Case Study from Western Himalaya, India*, 2017 *International Journal of Ecology* (2017), available at <https://www.hindawi.com/journals/ijecol/2017/3828609/>, last seen on 26/03/2021.

¹³⁰ R. Ray, M.D.S Chandran & T.V. Ramachandra, *Biodiversity and ecological assessments of Indian sacred groves*, 25 *Journal of Forestry Research* 21-28 (2014), available at http://wgbis.ces.iisc.ernet.in/energy/water/paper/jfr_sacred_groves/sacred-groves.pdf, last seen on 26/03/2021.

Some reports claim that there are around 1,00,000 to 1,50,000 SGs in India mostly located in the Himalayan region, Western and Eastern Ghats, Coastal Region, Central Indian Plateau, and Western Desert.¹³¹ In India, Himachal Pradesh has the highest number of SGs (5000) followed by Kerala and Chhattisgarh.¹³² SGs in India have received protection through social fencing and local community traditions, instead of a protection under a single law. The ownership and management of SGs varies between different states, culture and traditions. Therefore, policies and schemes to manage SGs vary from state to state.

Most of the SGs in India are under management by community, with very limited control of the government. For e.g., in Meghalaya, SGs are covered under the local government law (District Council Forest Act 1958) where the management of SGs is entrusted to the persons to whom the religious ceremonies for the particular village(s) are entrusted in accordance with the customary practice in vogue.¹³³ No timber or forest produce is allowed to be removed from the SGs except for the purposes in connection with religious functions or ceremonies recognized by the religious head of the local community.¹³⁴

There are also examples where SGs are managed by the government in the form of Reserve/Protected Forests notified under the IFA. As seen in the case of district Kodagu (Karnataka), where the SGs (*devarakadus*) were once demarcated and notified as protected forest in 1873 which led to stopping of coffee-cultivation in such areas. In the year 1905, the SGs were transferred to the revenue department, and eventually 62% of these groves were lost till 1985.¹³⁵ The SGs were then transferred back to the forest

¹³¹ Supra 129.

¹³² L.S. Kandari et al., *Conservation and management of sacred groves, myths and beliefs of tribal communities: a case study from north-India*, 3 Environmental Systems Research (2014), available at <https://link.springer.com/article/10.1186/s40068-014-0016-8>, last seen on 26/03/2021.

¹³³ B.K. Tiwari, S.K. Barik & R.S. Tripathi, *Biodiversity Value, Status, and Strategies for Conservation of Sacred Groves of Meghalaya, India*, 4 Ecosystem Health 20 (1998), available at <https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1526-0992.1998.00068.x>, last seen on 11/05/2021.

¹³⁴ Ibid.

¹³⁵ A.A. Ormsby, *The Impacts of Global and National Policy on the Management and Conservation of Sacred Groves of India*, 39 Human Ecology: An Interdisciplinary Journal 783 (2011), available at <https://link.springer.com/article/10.1007/s10745-011-9441-8?shared-article-renderer>, last seen on 26/03/2021.

department and notified as 'Reserve Forests'. However, these SGs though owned by the Forest Department are managed by village temple committees.¹³⁶

State governments have also initiated various schemes and policies for conservation of SGs. One such example is the Aravali Dev Van Sanrakshan Abhiyan launched by Udaipur South Forest Division in the year 1992 to help communities conserve the SGs.¹³⁷ However, the conservation of SGs is mainly done by community and local institutional arrangement. There is an effort to notify some of the SGs rich in floral and faunal diversity as 'Community Reserve' under the WPA which is expected to provide legal sanctity to such traditionally conserved areas on privately owned land.¹³⁸

¹³⁹ The Supreme Court of India has also upheld the value of such SGs in the Odisha mining case where the apex court ruled in the favour of Dongria Kondhs and Kutia Kondh with the observation that if the proposed project affects their right to worship their deity known as Niyam Rajah, that right has to be protected under articles 25 and 26 of Constitution of India.¹⁴⁰

VII. CHALLENGES IN EFFECTIVE IMPLEMENTATION OF CONSERVATION LAWS

The subject matter of forests and wildlife being in the concurrent list of the Constitution of India, the implementation mandate is mainly with the State Governments to identify, protect and manage such areas with the assistance and guidance from the Central government. While there are various legislations and policies which acknowledge and advocate for

¹³⁶ Ibid.

¹³⁷ *Dev-Forest Conservation at Aravali*, Department of Information and Public Relations, Rajasthan, available at <http://dipr.rajasthan.gov.in/content/diپر/en/news-detail.19079.html#>, last seen on 26/03/2021.

¹³⁸ S. 36C, The Wildlife Protection Act, 1972.

¹³⁹ P.V. Karunakran, M.Balasubramanian & B.R. Ramesh, *Conservation and Management of Sacred Groves in Kerala as Community Reserves* in *Strategy for Conservation of Sacred Groves*, in *Institute of Forests Genetics and Tree Breeding, Coimbatore* (C. KunhiKannan & B.R. Ramesh, 2004).

¹⁴⁰ *Orissa Mining Corporation v. Ministry of Forest & Environment & Ors.*, (2013) 6 SCC 476.

protecting wildlife spaces outside PAs, their implementation on ground has a chequered history. For instance, the ESZs being notified around PAs have many problems. Initially, the States were reluctant to declare ESZs, however with the Supreme Court's intervention in the matter of *Goa Foundation v. Union of India*, declaring 10 km uniform ESZ across all PAs until States complete the process,¹⁴¹ there was a sudden hurry in the manner in which ESZs are declared. One major criticism of the process has been the deliberate attempt to limit the extent of respective ESZs to the minimum. For example, in some cases it is either zero or up to a hundred meters with no consideration of the wildlife corridors which mars the entire purpose of declaring ESZs.¹⁴² The process also suffers from other administrative and political limitations, especially in the case of PAs situated near state borders, where the concerned state does not bother to consider the wildlife corridors and wild spaces beyond the respective state boundary. One such example is the draft notification for ESZ of Kaimur Wildlife Sanctuary in Bihar, which excluded any ESZ on its western, south-eastern and southern boundary of the Sanctuary which shares a boundary with the State of Uttar Pradesh.¹⁴³ While hearing a matter on infrastructure development on elephant corridors, the National Green Tribunal directed the Central Government to give legal recognition to the elephant corridors under the powers granted under Section 5 of the EPA and WPA.^{144 145} There are also instances where the political parties and local residents oppose the declaration of wildlife corridors and ESZs alleging that the same deprives them of the development as observed in the case of

¹⁴¹ Supra 73.

¹⁴² Mayank Aggarwal, *States propose minimal eco-sensitive zones around protected areas*, Mongabay (06/08/2021), available at <https://india.mongabay.com/2020/08/states-propose-minimal-eco-sensitive-zones-around-protected-areas/>, last seen on 11/05/2021..

¹⁴³ *Draft Notification*, MoEFCC Notification S.O. 274(E) (28/01/15), available at <http://moef.gov.in/wp-content/uploads/2017/06/S.O.%20No%20274%20%5B28.01.2015%5D%20Draft%20ESZ%20Notification%20on%20Kaimur%20Wildlife%20Sanctuary%2C%20Bihar.pdf>, last seen on 26/03/21.

¹⁴⁴ *Kashmira Kakati v. Union of India & Ors.*, 2017 SCC OnLine NGT 388.

¹⁴⁵ *Pradip Kumar Bhuyan v. Union of India & Ors.*, 2018 SCC OnLine NGT 1831.

Kaziranga National Park, Wayanad Wildlife Sanctuary and Corbett National Park.^{146 147 148}

While there are concerns regarding diversion of area for industrial activities in important PAs such as Dehing Patkai Elephant Reserve (Assam), Rajaji National Park (Uttarakhand), Bhagwan Mahavir Wildlife Sanctuary and Mollem National Park (Goa)- there are also instances where entire PAs are being denotified by States such as the Turtle Wildlife Sanctuary (Uttar Pradesh) and Renuka Wildlife Sanctuary (Himachal Pradesh).^{149 150 151}

Failure to acknowledge the wildlife spaces in and around PAs has significant conservation impacts, especially for animals which are known to disperse over long distances for their survival. In the absence of legal protection to elephant reserves, the fate of such conservation efforts lies greatly on the discretion of the states. As seen recently in the case of Shivalik Elephant Reserve where the Uttarakhand High Court had to intervene staying the State government's approval denotifying the 4,500 sq km of the Elephant Reserve for expansion of Dehradun airport.¹⁵²

There are several other examples of environmental disputes related to protection of wildlife outside PAs which demanded judicial intervention.

¹⁴⁶ Vineet Upadhyay, *Bookings in Uttarakhand's Corbett Tiger Reserve shut down over protests against eco-sensitive zone*, The New Indian Express (26/11/2019), available at <https://www.newindianexpress.com/nation/2019/nov/26/bookings-in-uttarakhand-s-corbett-tiger-reserve-shut-down-over-protests-against-eco-sensitive-zone-2067467.html>, last seen 26/03/2021.

¹⁴⁷ Anup Sharma, *Locals miffed with draft eco sensitive zone of Kaziranga*, NorthEast Now (30/12/2019), available at <https://nenow.in/north-east-news/assam/locals-miffed-with-draft-eco-sensitive-zone-of-kaziranga.html>, last seen on 26/03/2021.

¹⁴⁸ Neethu Joseph, *Explainer: The controversy over proposed ESZ around Wayanad wildlife sanctuary*, The News Minute (11/02/2021), available at <https://www.thenewsminute.com/article/explainer-controversy-over-proposed-esz-around-wayanad-wildlife-sanctuary-143222>, last seen on 26/03/2021.

¹⁴⁹ Mayank Aggarwal & Sahana Ghosh, *Environment ministry unlocked many protected areas during the lockdown*, Mongabay (12/06/2020), available at <https://india.mongabay.com/2020/06/environment-ministry-unlocked-many-protected-areas-during-the-lockdown/>, last seen on 26/03/2021.

¹⁵⁰ Ambika Sharma, *Renuka wildlife sanctuary area to be denotified soon*, The Tribune India (20/02/2021), available at <https://www.tribuneindia.com/news/himachal/renewa-wildlife-sanctuary-area-to-be-denotified-soon-214792>, last seen on 26/03/2021.

¹⁵¹ Neha Shukla, *Varanasi to bid adieu to turtle sanctuary*, The Times of India (13/11/2019), available at <https://timesofindia.indiatimes.com/india/varanasi-to-bid-adieu-to-turtle-sanctuary/articleshow/72031659.cms>, last seen on 26/03/2021.

¹⁵² PTI, *Uttarakhand High Court stays denotification of Shivalik Elephant Reserve*, The Indian Express (09/01/2021), available at <https://indianexpress.com/article/india/uttarakhand-high-court-stays-denotification-of-shivalik-elephant-reserve-7139531/>, last seen on 26/03/2021.

One of the major cases related to conservation of wildlife corridors and stepping stone forests can be seen in the Kaziranga case where the failure to declare ESZ around Kaziranga National Park had a significant impact on the wildlife dispersing towards the Karbi Anglong hills during seasonal floods inside Kaziranga National park, which lies on active floodplain. The wildlife of Kaziranga evolved in such a way that every year during floods, the animals would disperse towards the rich forests of Karbi Anglong which is situated on higher elevation. However, the increase in traffic on NH-37, construction of restaurants and commercial hotels on the corridor, and rampant mining in Karbi Anglong hills itself was proving detrimental to wildlife.^{153 154 155} The case drew a lot of attention towards the importance of maintaining wildlife corridors when the Supreme Court of India had to intervene and ban the mining in Karbi Anglong hills and any new construction on the wildlife corridors.¹⁵⁶ There was also a boundary wall constructed by Numaligarh Refinery Limited in No-Development Zone inside Deopahar Reserve Forest which obstructed elephant movements and even caused fatality of an elephant.¹⁵⁷ The National Green Tribunal directed demolition of the wall and regulated traffic on NH-37 to facilitate the free movement of wildlife between Kaziranga National Park and surrounding forests.¹⁵⁸

While the Kaziranga case received much attention because of its recognition as a UNESCO World Heritage site and a notified Tiger Reserve, a majority of the wildlife spaces do not enjoy such attention and their conservation is greatly challenged due to ignorance, poor

¹⁵³ National Tiger Conservation Authority, *Report regarding Rampant Mining in Karbi Anglong Hills adjoining Kaziranga Tiger Reserve, Assam*, available at <http://docplayer.net/190484661-Report-regarding-rampant-mining-in-karbi-anglong-hills-adjoining-kaziranga-tiger-reserve-assam.html>, last seen on 25/03/2021.

¹⁵⁴ Central Empowered Committee, Report No. 6 of 2019 in W.P.(C) No. 202/1995, available at <http://cecindia.nic.in/wp-content/uploads/2019/03/Report-No.-6-of-2019-in-App-No.1431-of-2018-filed-by-Rohit-Chaudhary.pdf>, last seen on 11/05/2021.

¹⁵⁵ Controller and Auditor General of India, *Report 3 of 2014-Performance Audit of Kaziranga National Park - Issues and Challenges*, available at <https://cag.gov.in/en/audit-report/details/4371>, last seen on 26/03/2021.

¹⁵⁶ T.N. Godavarman v. Union of India, W.P. (Civil) 202 of 1995 (Supreme Court, 12/04/2019).

¹⁵⁷ Shreya Dasgupta, *Refinery township golf course and boundary wall puts elephants at risk*, Mongabay (06/11/2015), available at <https://news.mongabay.com/2015/11/refinery-township-golf-course-and-boundary-wall-puts-elephants-at-risk/>, last seen on 26/03/2021.

¹⁵⁸ Supra 75.

documentation of biodiversity and lower resource allocation for monitoring and management by the government. These areas face multiple challenges ranging from encroachment of land, poaching, human-wildlife conflict as well as establishment of big infrastructure and development projects. A case in point is the recent proposal for establishing a 41,500-megawatts solar and wind renewable energy park spread across 60,000 hectares in the Kutch region of Gujarat. The unique desert ecosystem has been classified as a 'wasteland' even though it is home to hundreds of bird species. The project proponents also seem to have ignored the fact that the proposed area is a part of the Central Asian Flyway, an international bird migration route.¹⁵⁹ In one case, the environmental clearance of a 1320 MW coal-based thermal power plant was cancelled by the National Green Tribunal due to failure of the project proponent to acknowledge impact of the project on wildlife in the Reserve Forest areas adjoining the project site.¹⁶⁰ In another case, while hearing a matter related to de-notification of Turtle Wildlife Sanctuary situated in Varanasi, the Allahabad High Court relied on a report by Wildlife Institute of India where it observed that a portion of the PA was found to be "*least suitable habitat for turtles because of high anthropogenic disturbances such as cemented ghats, intense ferry boat activity, pollution and human presence along the river*".¹⁶¹

Another important issue affecting wildlife conservation is dilution of the legal safeguards that were promulgated in the first place to protect the wild habitats. For example, wetlands have long been regarded as 'wastelands' and it was only in 2010 that the Environment Ministry promulgated the Wetland (Conservation and Management) Rules, 2010 to give these unique ecosystems legal protection. However, in 2017 with the passing of Wetland (Conservation and Management) Rules, 2017 various safeguards were diluted. To illustrate, the new Rules exclude man-made water bodies constructed for various purposes such as drinking water, aquaculture, salt production, recreation, and irrigation purposes. This removes a large

¹⁵⁹ Mayank Aggarwal, *The mega renewable energy park may not be as green as expected*, Mongabay (22/09/2020), available at <https://india.mongabay.com/2020/09/mega-renewable-energy-park-in-kutch-could-have-potentially-adverse-environmental-impact/>, last seen on 26/03/2021.

¹⁶⁰ Debadyo Sinha v. Union of India, 2014 SCC OnLine NGT 6090.

¹⁶¹ Bharat Jhunjhunwala v. Union of India, 2019 SCC OnLine All 4.

number of active wetlands from the definition of wetland and opens them for ecologically destructive uses. The National Wetland Atlas developed by the Indian Space Research Organization (ISRO) and released in 2011 estimated 2,01,503 wetlands in the country spread over an area of 14.7 million hectares. Out of these, 1,45,641 wetlands or 72% of the total number spread over 4.4 million hectares are man-made wetlands.¹⁶² Therefore, the 2017 Rules fail to cover 72% of the total wetlands in the country. In states such as Tamil Nadu, agriculture, drinking water security, and drought and flood mitigation are almost entirely dependent on traditional engineered water harvesting structures such as *eris* and *kanmais* (irrigation tanks). In such areas, the Rules will not be of much use.¹⁶³ Further, the 2010 rules extended protection to Ramsar wetlands; government notified wetlands; high-altitude wetlands larger than 5 hectares; wetlands at elevations less than 2,500 metres and spread over 500 hectares; wetlands located in ecologically sensitive areas and those lying within UNESCO World Heritage Sites.¹⁶⁴ However, legal protection was restricted to Ramsar wetlands and the government notified wetlands under the 2017 Rules¹⁶⁵ which superseded the 2010 Rules.

Ramsar sites which represent wetlands of international importance and upon their designation, the governments commit to their wise use. Wise use of wetlands implies maintaining their ecological integrity. However, Ramsar wetlands in India have been affected by unregulated activities, such as large-scale water abstraction, reclamation, establishment of industries, discharge of pollutants, etc. In fact, Keoladeo National Park and Loktak Lake are included in the Montreux Record.¹⁶⁶ The Montreux Record is a register of Wetlands of International Importance where changes in the ecological character have occurred, are occurring, or are likely to occur due

¹⁶² N. Jayaraman, *India's new wetland rules threaten to destroy 65% of its water bodies rather than protect them*, Scroll.in (12/10/2017), available at <https://scroll.in/article/853515/indias-new-wetland-rules-threaten-to-destroy-rather-than-protect-65-of-its-water-bodies>, last seen on 26/03/2021.

¹⁶³ Ibid.

¹⁶⁴ Wetland (Conservation and Management) Rules, 2010.

¹⁶⁵ Wetland (Conservation and Management) Rules, 2017, available at [http://www.indiaenvironmentportal.org.in/files/file/Wetlands%20\(Conservation%20and%20Management\)%20Rules,%202017.pdf](http://www.indiaenvironmentportal.org.in/files/file/Wetlands%20(Conservation%20and%20Management)%20Rules,%202017.pdf), last seen on 26/03/2021.

¹⁶⁶ *ATREE Report on Policy Consultation on Ramsar Wetlands in India*, Conference held on 15/05/2002 (Unpublished).

to human interference.¹⁶⁷ Some of these wetlands are also threatened on account of large dams and other development projects that have altered the flow patterns of rivers feeding the wetlands.¹⁶⁸

The CRZ Notifications are another case in point. The 2019 CRZ Notification which superseded the 2011 CRZ Notification allowed for future possibility of intensifying construction activity in urban coastal areas and development of airports in non-arable lands in rural coastal areas. Urbanisation and development increases the threat of flood for an already vulnerable coastal population of 36 million people.¹⁶⁹

Conservation sites such as IBAs represent areas of internal importance for birds and other biodiversity. Close to 40% of IBAs fall outside protected areas and thus form an important tool for 'landscape-level conservation planning'.¹⁷⁰ However, as mentioned in the Draft Visionary Perspective Plan (2020-2030) for the Conservation of Avian Diversity, their Ecosystems, Habitats and Landscapes in the Country, though a small proportion of these non-protected area IBAs enjoy community protection, most of them do not have any conservation action plan or management prescription for their sustenance. IBAs which are outside the protected area network are under severe anthropogenic pressure which leads to destruction of habitats and decline in avian diversity. Therefore, it is important to strengthen conservation and management of key bird habitats outside the protected areas.¹⁷¹

With the ever-increasing push for industrialization, transportation corridors, urbanization and constant endeavour to improve India's rank in

¹⁶⁷ *The Montreux Record and the Ramsar Advisory Missions*, Ramsar, available at <https://www.ramsar.org/sites/default/files/documents/library/info2007-06-e.pdf>, last seen on 11/05/2021.

¹⁶⁸ Supra 166.

¹⁶⁹ Meenakshi Kapoor, *India diluted the law that protects its coastal areas once the public could no longer give inputs*, Scroll.in (11/08/2020), available at <https://scroll.in/article/969922/india-diluted-the-law-that-protects-its-coastal-areas-once-the-public-could-no-longer-give-inputs>, last seen on 26/03/2021.

¹⁷⁰ Ministry of Environment & Forests, Government of India, *India's Fifth National Report to the Convention on Biological Diversity 2014*, available at <https://www.cbd.int/doc/world/in/in-nr-05-en.pdf>, last seen on 26/03/2021.

¹⁷¹ Ministry of Environment, Forest & Climate Change, Government of India, *Draft Visionary Perspective Plan (2020-2030) for the Conservation of Avian Diversity, their Ecosystems, Habitats and Landscapes in the Country*, available at <https://ourgovdotin.files.wordpress.com/2020/03/0-1.pdf>, last seen on 26/03/2021.

the ease of doing business' index- wildlife conservation does not appear to be given higher priority.^{172 173} Dilutions of key environmental regulations such as Environment Impact Assessment Notification, 2006 especially the clauses which relates to protection of wildlife are some concerns raised by environmentalists.^{174 175 176 177 178} Reduced government funding to premiere public institutes and agencies involved in research and conservation of forest and wildlife such as Wildlife Institute of India, Indian Institute of Forest Management, Wildlife Crime Control Bureau and National Tiger Conservation Authority will further weaken the existing foundations for wildlife protection.^{179 180 181}

¹⁷²Ministry of Environment, Forest and Climate Change, *Our focus is promoting ease of doing responsible business: Union Environment Minister*, Press Information Bureau (19/08/2019), available at <https://pib.gov.in/PressReleaseDetail.aspx?PRID=1582341>, last seen on 11/05/2021.

¹⁷³IndiaSpend, *How Government's Push For Ease Of Doing Business Is Compromising Environment Regulation*, Bloomberg Quint, available at <https://www.bloomberqqint.com/law-and-policy/how-governments-push-for-ease-of-doing-business-is-compromising-environment-regulation>, last seen on 26/03/2021.

¹⁷⁴ Vindhya Bachao Desk, *Comments & Objections on Draft EIA Notification 2020*, Vindhyan Ecology and Natural History Foundation, available at <https://vindhyabachao.org/publications/reviews/798-review-draft-eia-2020>, last seen on 26/03/2021.

¹⁷⁵ S. Janyala, A. Aryan & S. Verma, *NITI Aayog orders study on 'economic impact' of judicial decisions*, The Indian Express (08/02/2021), available at <https://indianexpress.com/article/business/niti-aayog-orders-study-on-economic-impact-of-judicial-decisions-7178976/>, last seen on 26/03/2021.

¹⁷⁶ D. Sinha & D. Mehta, *Environmental Clearances and Monitoring in India*, Vidhi Centre for Legal Policy, available at <https://vidhilegalpolicy.in/research/environmental-clearances-and-monitoring-in-india-report-card-for-the-ministry-of-environment-forest-and-climate-change/>, last seen on 26/03/2021.

¹⁷⁷ A. Samuel et al., *Review of the EIA Notification 2020*, 55 Economic and Political Weekly (2020), available at <https://www.epw.in/journal/2020/25/letters/review-eia-notification-2020.html>, last seen on 26/03/2021.

¹⁷⁸ C. Chauhan, *Prakash Javadekar clears 240 projects in 3 months*, Hindustan Times (11/09/2014), available at <https://www.hindustantimes.com/india/prakash-javadekar-clears-240-projects-in-3-months/story-WCrxd2rhSxQ3ozpOBZ7YiN.html>, last seen on 26/03/2021.

¹⁷⁹ C. Chauhan, *Govt. plans to cut funds to 5 autonomous bodies*, Hindustan Times (11/09/2014), available at <https://www.hindustantimes.com/india/prakash-javadekar-clears-240-projects-in-3-months/story-WCrxd2rhSxQ3ozpOBZ7YiN.html>, last seen on 26/03/2021.

¹⁸⁰ A. Bhaduri & R. Gupta, *Budget 2021: Environmental conservation or business as usual*, India Water Portal (13/02/2021), available at <https://www.indiawaterportal.org/article/budget-2021-environmental-conservation-or-business-usual>, last seen on 26/03/2021.

¹⁸¹ J. Mazoomdaar, *Environment panel against entertaining 'anti-development' representations*, The Indian Express (14/01/2017), available at <https://indianexpress.com/article/india/environment-panel-against-entertaining-anti-development-representations-4473317/>, last seen on 26/03/2021.

VIII. CONCLUSION

The wildlife conservation regime in India is still founded on the WPA. There have been amendments to existing laws to accommodate more areas under the ambit of protection for wildlife, under different legislations such as EPA and Biological Diversity Act, 2002. However, the manner and the pace with which they are done are not sufficient and shows a lack of political will. This is further challenged by the fact that the state governments often see it as political propaganda to jeopardize their economic progress by restricting developmental activities. Many of the ESZs which were supposed to be acting as shock absorbers and wildlife corridors around existing PAs could not see the light of the day, and those which were notified have been kept to the minimum. While the lack of political will is evident from denotification of notified PAs, dilutions of key environmental legislations and lesser financial support to public institutions involved in wildlife conservation-the State will be failing in the constitutional¹⁸² mandate to take all measures necessary to protect the forests and wildlife of the country under public trust doctrine. At the same time, it is the fundamental duty of all the citizens to protect and conserve the areas of wilderness and having compassion for wild animals. In the era, where climate change is a reality and pandemics of zoonotic origins are becoming more common- we must recognize the importance of natural ecosystems as the first line of defense and take immediate policy measures for their long-term conservation.¹⁸³

¹⁸² Art. 48 A, the Constitution of India.

¹⁸³ Art. 51 A (g), the Constitution of India.

ANALYSIS OF WILDLIFE CLEARANCES IN INDIA 2021

[January - June]



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SUMMARY

Persisting upon its consistency from the previous many years, this year as well, the Standing Committee of National Board for Wildlife was found to be using its discretion to allow or reject proposals, in diverting protected area land for the reasons that does not benefit the wildlife, instead detriment crucial wildlife habitats. In the first half of the year 2021 alone, the Standing Committee has approved 1,385.34 ha land diversion where 302.89 ha was from protected areas and 780.24 ha was from tiger habitats. They also allowed complete de-notification of two protected areas in Andaman and Nicobar Islands - Galathea Bay Sanctuary and Megapode Sanctuary and approved rationalizations of two sanctuaries - Salt Water Crocodile Sanctuary in Andaman and Nicobar Islands, and Bandh Baretha Sanctuary in Rajasthan. Despite such large-scale diversions approved every year, our international commitments towards achieving the goals under the Convention on Biological Diversity are claimed to be on track.

A strategic decisiveness was observed in the functioning of the Standing Committee which focused on speeding and diluting the process of clearance for ease in clearing projects, neglecting some keystone species at stake such as leatherback turtles, saltwater crocodiles, megapodes and of course tigers and elephants. The strategized approach involved appraising projects without site visits, allowing biodiversity assessment for shorter span, granting de-notification or rationalization of protected areas where upcoming projects are lined to remove the legal obligations for these projects to undergo the process of Wildlife Clearance as per the Wildlife (Protection) Act, 1972. Infrastructural development like holistic development of Nicobar Islands has been given a priority focus in front of Andaman and Nicobar Island's fragile ecosystem. One more concern was multiple proposals for a single project were appraised separately which conceals the actual impact of the project. Besides this, the Wildlife Institute of India who is a member of the Standing Committee has been found to be conducting under "Conflict of Interest" in some projects. This half yearly assessment of the wildlife clearances discusses how the Standing Committee has failed its mandate and highlights some major concerns that follow.

KEY FINDINGS:

- SC-NBWL considered a total of 62 proposals in four meetings, out of which 29 proposals were for diversion within protected areas.
- A total of 302.89 hectares (ha) were diverted under 29 proposals from wildlife sanctuaries, national parks and conservation reserves; no proposal was rejected.
- Approvals were given for complete de-notification of two protected areas in Andaman and Nicobar Islands - Galathea Bay Sanctuary and Megapode Sanctuary. Two more approvals were given for 'rationalization' of Salt Water Crocodile Sanctuary in Andaman and Nicobar Islands, and Bandh Baretha Sanctuary in Rajasthan. The four approvals affect a total of 1385.784 ha.
- 87% of diversion is due to linear projects (transmission lines, roads, railways and pipelines).
- 386.137 ha approved for diversion from Eco-Sensitive Zones, of which 100.47 ha is forest land and rest 285.662 ha is non-forest land.
- 780.2418 ha were approved for diversion within tiger habitats for linear projects and infrastructure development.



I. INTRODUCTION



India's Wildlife (Protection) Act, 1972 (WLPA) in its 2002 amendment, laid the statutory formation of the National Board for Wildlife (NBWL). It is a 47-member committee headed by the Prime Minister of the country¹ and is tasked with promoting conservation and development of wildlife and forests. In addition to framing policies and advising the Central government on matters related to conservation, it is responsible for regulating activities within India's Protected Areas (PAs) i.e., national parks, wildlife sanctuaries, conservation reserves and community reserves².

The law mandates the National Board for Wildlife to constitute a Standing Committee for carrying out its various duties and functions³. Having been delegated the powers of the National Board, the Standing Committee is required to consider proposals that involve the use of land from PAs for activities such as mining, irrigation, roads, highways, etc. It is the responsibility of the Standing Committee of National Board for Wildlife to screen these proposals, seek additional information or studies, order for site inspections, and subsequently approve or reject the proposal. Prior approval from the Standing Committee is also mandatory for proposals involving alteration of boundaries of wildlife sanctuaries and national parks⁴. The SC-NBWL is headed by the Minister of Environment, Forests and Climate Change. It consists of a member secretary and not more than 10 members nominated by the Vice Chair of NBWL (i.e., Minister of Environment, Forests and Climate Change) from the members of the Board⁵. Further, as per the amendment made to the Wildlife (Protection) Act, 1972 in 2006, approval from the Standing Committee of National Board for Wildlife (SC-NBWL) is mandatory for projects which involve diversion of Tiger Reserves and areas which link one PA or Tiger Reserve with another PA or Tiger Reserve⁶.

01. Section 5A of Wildlife (Protection) Act, 1972

02. Section 5C of Wildlife (Protection) Act, 1972

03. Section 5B of Wildlife (Protection) Act, 1972

04. Sub Section (3) of Section 26 A of Wildlife (Protection) Act, 1972 Sub Section (5) of Section 35 of Wildlife (Protection) Act, 1972

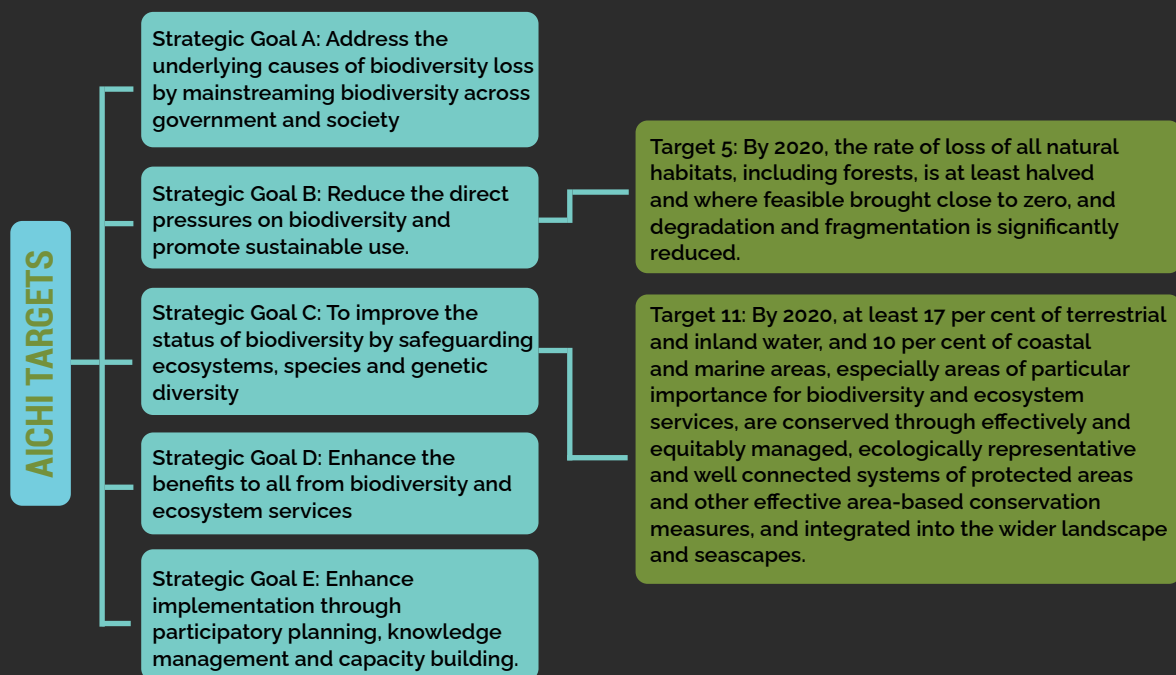
05. Sub Section 2 of Section 5B of Wildlife (Protection) Act, 1972

06. Section 38 O (g) of Wildlife Protection Act, 1972 as amended in 2006



Box 1: India's role under Convention on Biological Diversity for improvement of Protected Area Network

"The Convention on Biological Diversity (CBD) is an international legally-binding treaty with three main goals: conservation of biodiversity, sustainable use of biodiversity, and the fair and equitable sharing of the benefits arising from the use of genetic resources." (UNEP n.d.) India became a signatory to the CBD in 1994 (Convention on Biological Biodiversity n.d.), and subsequently became liable to implement the strategic targets set under the convention. In 2010 at its tenth Conference of Parties (COP10), due to non-accomplishment of CBD goals by the signatories, the Strategic Plan for Biodiversity 2011-2020, a ten-year framework for action with Aichi Targets was adopted with time-bound goals to be achieved by 2020 (Dhami 2021). The chart below shows broadly classified five strategic goals under which 20 ambitious yet achievable Aichi Targets were defined. This chart focuses on two of the targets regarding wildlife habitat loss due to fragmentation and improvement of protected area network in the country.



For implementation of these Aichi Targets, each signatory country had to submit their national targets based on the legal framework of their country. India adopted 12 National Biodiversity Targets (NBT) under the convention (Convention on Biological Diversity 2014), while this report is interested in the following two:



**NATIONAL BIODIVERSITY
TARGET 3**

"Strategies for reducing rate of degradation, fragmentation and loss of all natural habitats are finalized and actions put in place by 2020 for environmental amelioration and human well-being."

**NATIONAL BIODIVERSITY
TARGET 6**

"Ecologically representative areas on land and in inland waters, as well as coastal and marine zones, especially those of particular importance for species, biodiversity and ecosystem services, are conserved effectively and equitably, on the basis of PA designation and management and other area-based conservation measures and are integrated into the wider landscapes and seascapes, covering over 20% of the geographic area of the country, by 2020."

The window for achieving the targets is over and now is the time to review progress. The fifteenth Conference of Parties (COP15) which was due to be held in October 2020, was postponed due to the Covid-19 pandemic. India had submitted its Sixth National Report to the Convention on Biological Diversity in 2018 which claims that India is "on track" to achieve the biodiversity targets (Press Information Bureau 2018). As per the report, over 20 percent of India's total geographical area is under biodiversity conservation and India has exceeded in achieving the terrestrial component of 17% of Aichi target 11 and 20% of NBT 6.

However, this appears to be far from true as approvals have been granted to remove the protected area status of large land areas. In two cases this year, entire sanctuaries were approved to be de-notified. Large chunks of protected area land and biodiversity rich migratory wildlife habitats were diverted for infrastructure projects every year. Currently India's geographical area under protected areas is 1,71,921 sq.km. under 981 protected areas including 104 National Parks, 566 Wildlife Sanctuaries, 97 Conservation Reserves and 214 Community Reserves. This is only 5.03% of the geographical area of India (Wildlife Institute of India 2021).

The National Board responsible for promoting conservation of wildlife and its habitat were busy doing the opposite of its legal statute. The National Board for Wildlife had completely dusted off its responsibilities to the Standing Committee and the Board itself hasn't met since 2014. The Standing Committee is a smaller committee delegated with all the powers of the National Board, which has been working with mindset that contrasts with the mandate of conservation of wildlife. The committee itself is not validly constituted with GEER Foundation as its member, that does not qualify as a Non-Governmental Organization (NGO). The National Green Tribunal had ruled regarding the role of Standing Committee that the environment minister had no power to overrule the committee's majority opinion, however the members not exercising their powers appear to be dictated by the chairperson (Dutta 2021). The committee had de-notified many sanctuaries and gave approvals for protected area land to be used for developmental projects: 409.74 ha in 2018, 481.56 ha in 2019 (LIFE 2020), 160.3 ha in 2020 (LIFE 2021) and 302.89 ha in the first half of 2021. Besides PA diversion, approvals were granted to projects passing through Eco-Sensitive Zones (ESZ) of PAs, Tiger Reserves, Elephant Reserves, and important wildlife migratory corridors. The former chairman of the committee, the minister of environment was found showcasing the clearance of many detrimental projects as an achievement of the committee through [tweets](#) and public statements. Despite these facts, it is claimed that India has over-achieved their NBTs and correspondingly the Aichi Targets.



II. METHODOLOGY

The purpose of this paper is to analyse the wildlife clearances granted by the SC-NBWL. We have been analysing the approvals made by SC-NBWL for diversion within PAs since 2018. Building upon the analysis carried for the year 2018, 2019 and 2020, this paper aims to analyse the approvals granted by SC-NBWL from January 01-June 31, 2021.

This paper is based on the review and analysis of the minutes of the meetings of the SC-NBWL conducted in 2021. The minutes uploaded on the Wildlife Division of the Ministry of Environment, Forests and Climate Change (MOEF&CC) website are tracked and the projects considered for granting wildlife clearances are documented for analysis. The proposed project areas are then mapped to study their proximity to concerned PAs and affected wildlife habitats.

III. WILDLIFE CLEARANCES GRANTED IN 2021

The SC-NBWL has conducted four meetings so far in the first half of 2021, i.e., January, February, March and June. A total of 64 proposals were considered during this period where 57 approvals were given for proposals of fresh projects (46), amendments (3), lease renewal (1), rationalization (4) and policy matters (3). Rest of the 7 proposals were either deferredⁱ or delistedⁱⁱⁱ.

During the first half of the year only, the committee took major decisions regarding projects which may lead to huge impacts on wildlife. These involve de-notification of area from four sanctuaries, diversion of 1,385.34 ha of area from within and around protected areas including diversion of 780.24 ha from tiger habitats. These diversions are further explained in the following sections of the report.



III.I DE-NOTIFICATION / RATIONALIZATION OF PROTECTED AREAS

The “de-notification” i.e., removal of a protected area from its protected area status does not find any mention in the Wildlife (Protection) Act, 1972 itself. It does not provide any provision regarding the de-notification of a protected area, and therefore the National Board for Wildlife or the Standing Committee does not possess any statutory power to de-notify any protected area. With respect to grant of permissions for “rationalization/boundary alteration” of protected areas, Supreme Court in an order⁷ had directed that such “matters will be considered by the Standing Committee of the National Board for Wildlife on its own merits and in conformity with the orders and directions passed by this Court from time to time.” This decision gave the standing committee, the apex body in our country for wildlife conservation, powers for protection of protected areas by avoiding their irrational and unnecessary alteration. On the contrary the standing committee has been found to be working towards reducing the protected areas for ease in clearing projects. De-notification and rationalization terms have been conflated by the committee. As per the targets under the CBD as well, we need to improve our protected area network throughout the country by identifying ecologically significant ecosystems and designate them as protected areas.



The standing committee in this first half of the year, considered three proposals for de-notification and two for rationalization of protected area, where they gave approvals for two de-notification and two rationalizations. Three of these protected areas are from the Andaman and Nicobar Islands. During this year, sanctuaries of Andaman and Nicobar Islands especially are targets of the committee due to the upcoming project for holistic development of the Nicobar Islands. De-notification of protected areas is the new norm for the Standing Committee of NBWL which makes the decision making for clearing projects easier. Protected areas are now being completely de-notified on grounds of boundary rationalization. This complete de-notification of sanctuaries is ecologically, ethically and as per law, be it any way, is wrong and in violation of the Wildlife (Protection) Act, 1972.

07. Order dated 05.10.2015 I.A.No. 2601/2009 in W. P.(C) No. 202 of 1995.



GALATHEA BAY SANCTUARY, ANDAMAN AND NICOBAR ISLANDS

During the deliberations for this proposal, it was informed that the Andaman and Nicobar Islands administration had notified intention to declare Galathea bay as sanctuary for an area of 11.44 sq.km (114.4 ha) in the year 1997 under section 18 (1) of the Wildlife (Protection) Act, 1972. It was also informed that the acquisition proceedings for notification of the sanctuary were not completed and final notification of sanctuary had not yet been published. Now, the Andaman and Nicobar Islands administration has done a U turn, and submitted de-notification proposal for the Galathea Bay Sanctuary (SC-NBWL 2021a). The committee approved the de-notification thus backing NITI Ayog's upcoming plan for "Holistic development of Great Nicobar Island in Andaman and Nicobar Islands" (NITI Ayog 2020) which includes an International Container Transshipment Terminal (ICTT), greenfield international airport, a power plant and a new township (AECOM India Private Ltd. 2021). The Terms of Reference (TOR) for the project were also granted by Environmental Appraisal Committee (EAC) in haste, clearing another "hurdle" for Niti Aayog's mega development plan for Great Nicobar Island (Conservation India 2021).

The Galathea sanctuary bay is crucial for Leatherback turtles as it is one of the largest Leatherback turtle nesting grounds in India (MoEF&CC 2021a). With this development, the shoreline which is used by leatherback turtles for nesting will be interrupted and further existing threats like pigs and dogs preying on their nests will also exacerbate. Besides this, the site is prone to cyclones as it falls under the seismic zone V (Sinha 2021). The de-notification has been recommended with a directive to prepare a comprehensive management plan for conservation of Leatherback turtles, to be prepared by Wildlife Institute of India (WII). The proposal has been approved without a conservation plan in place. Also, this decision is in violation of the Wildlife (Protection) Act, 1972 as the act does not empower the National Board for Wildlife or the Standing Committee to de-notify any Protected Area.

The minimum extent of the Eco-sensitive Zone of Galathea National Park as per its notification dated October 28, 2020 is **zero** "because the major geographical area of Great Nicobar Island is covered under Protected Area Network and Tribal Reserve in such a way that there is little area left for holistic development around the area." (MoEF&CC 2020a) Besides this, a 750-metre buffer is set aside all along the coastline for development, which will lead to development projects located away from the coast and near to National Park boundary (MoEF&CC 2020a). This will have severe impacts on the endemic fauna of the region. Also, the decision was taken in the same month when the ministry launched its first Marine Turtle National Action Plan for conservation of marine turtles in January 2021.



MEGAPODE SANCTUARY, ANDAMAN AND NICOBAR ISLANDS

Another denotification of Megapode Sanctuary submitted by the office of Principal Chief Conservator of Forest (Wildlife), Andaman and Nicobar Islands was approved. The Megapode Island submerged post the tsunami of December 2004 and does not exist anymore. This reason was cited as the basis for de-notifying the sanctuary. Again, this is not in accordance with the law for the Standing Committee to approve de-notification. Further, the submerged island can still hold importance as a fish breeding site and for mangrove recolonization (Dutt 2021). A protected area need not be only a land-based area. Aquatic protected areas also exist as biodiversity is present in both land and water.



SALT WATER CROCODILE SANCTUARY, ANDAMAN AND NICOBAR ISLANDS

Standing Committee approved the rationalization of boundary of Salt Water Crocodile Sanctuary in Andaman and Nicobar Islands and its renaming as Lohabarrack Sanctuary. This is the third de-notification from the Union Territory aiming to aid quicker progress of NITI Ayog's holistic development of Nicobar Islands. The sanctuary was notified a protected area of 100 sq. km. (10,000 ha) in 1983 which has been reduced by almost 60% to 41.716 sq. km. (4,171.6 ha) after this rationalization. As per the minutes, only 22.21 sq.km. was the actual area as per their verification of the boundary description in the earlier notification. However, they decided on exclusion of an area of 0.464 Sq.km. having no significant biodiversity from the sanctuary and inclusion of 19.97 sq. km. of territorial waters, having luxuriant growth of Stag Horn and Table Horn Coral. Therefore, the revised area of the wildlife sanctuary is 41.716 Sq.km.



This reduction in size of the sanctuary is being criticized by wildlife conservationists as it will allow movement of people in the conflict zone and may lead to an increase in human-crocodile conflicts (Chaitanya 2021). Wildlife Institute of India (WII), gave its approval with a condition that Andaman and Nicobar Administration should develop a Management Plan for long term conservation of crocodiles and other associated marine life of the sanctuary as it has been identified as one of the critical crocodile habitats of Andaman and Nicobar Islands. Further the conditions added that, they need to submit a ground-truthing report to MoEF&CC in respect of the old boundaries within 30 days. The decision for de-notification was made first and then the administration was asked for a conservation plan for management of crocodiles and old-boundary ground-truthing report. This suggests *fait accompli* – even if the report suggests the de-notification is unreasonable, its recommendations would be in vain as the decisions have already been made, sitting online without looking at on-ground reality.

BANDH BARETHA SANCTUARY, RAJASTHAN

In the 61st meeting of the Standing Committee of NBWL, a proposal for the rationalization of Bandh Baretha Sanctuary in Bharatpur, Rajasthan was approved. Rajasthan wildlife board, headed by Chief Minister Ashok Gehlot, had cleared the proposal on January 29, 2021 to shift the sanctuary boundary (Mazoomdaar 2021). As per the minutes, the rationalization removes three blocks - Bansi Pahadpur Block A and B, Kot Block and SookhaShila with total area 2785.5 ha from the sanctuary "which are disjointed and already ravaged" as per the committee. This has been compensated by addition of forest blocks Pahadtali, Mevala, Banswari, Jamoora Timkoli in Karauli district of total area 19785.5 ha which will lead to the area of the sanctuary increase by 17000 ha after the rationalization. This statement is not true as the information regarding the area of the sanctuary is misleading. The minutes state that the total area of the sanctuary at present is 19,830.73 ha (198.3 km²). However, it was found that as per the gazette notification dated December 26th, 2018 of the Bandh Baretha Sanctuary, its area is 20,416 ha. (204.16 km²) which shows a difference of 585.27 ha in the area of sanctuary mentioned. Another interesting thing to note here is that the exclusion of Bansi Pahadpur blocks is associated with mining of pink sandstone, which is unique in the area. Mining was banned in the area in 2016, though illegal mining operations have continued (Mazoomdaar 2020) which explains the disjointed and ravaged condition of the blocks. Mining within the sanctuary is a prohibited activity as per its gazette notification (MOEF&CC 2018). The major concern here is that the denotification of these blocks from the sanctuary is associated with mining to fulfil the demand of pink sandstone for a major construction project in Uttar Pradesh (Mazoomdaar 2021). The decisions of the committee have been strategized to avoid legal obligations.



III.II DIVERSIONS WITHIN PROTECTED AREAS

Protected Area under Section 2(24A) of the Wildlife (Protection) Act, 1972 is defined as a National Park, a sanctuary, a conservation reserve or a community reserve notified under Sections 18, 35, 36A and 36C of the Act. The SC-NBWL in the first half of this year has approved a total fresh diversion of 1385,344 ha. Of the total diversion, 302.89 ha was diverted from PA land under 29 proposals and 1082.45 ha diversion was from non-PA (either inside ESZ or close vicinity of a PA) land under 23 proposals. The approvals entail diversions from linear, hydel, mining and others category of projects.

Protected Area Diverted (ha)

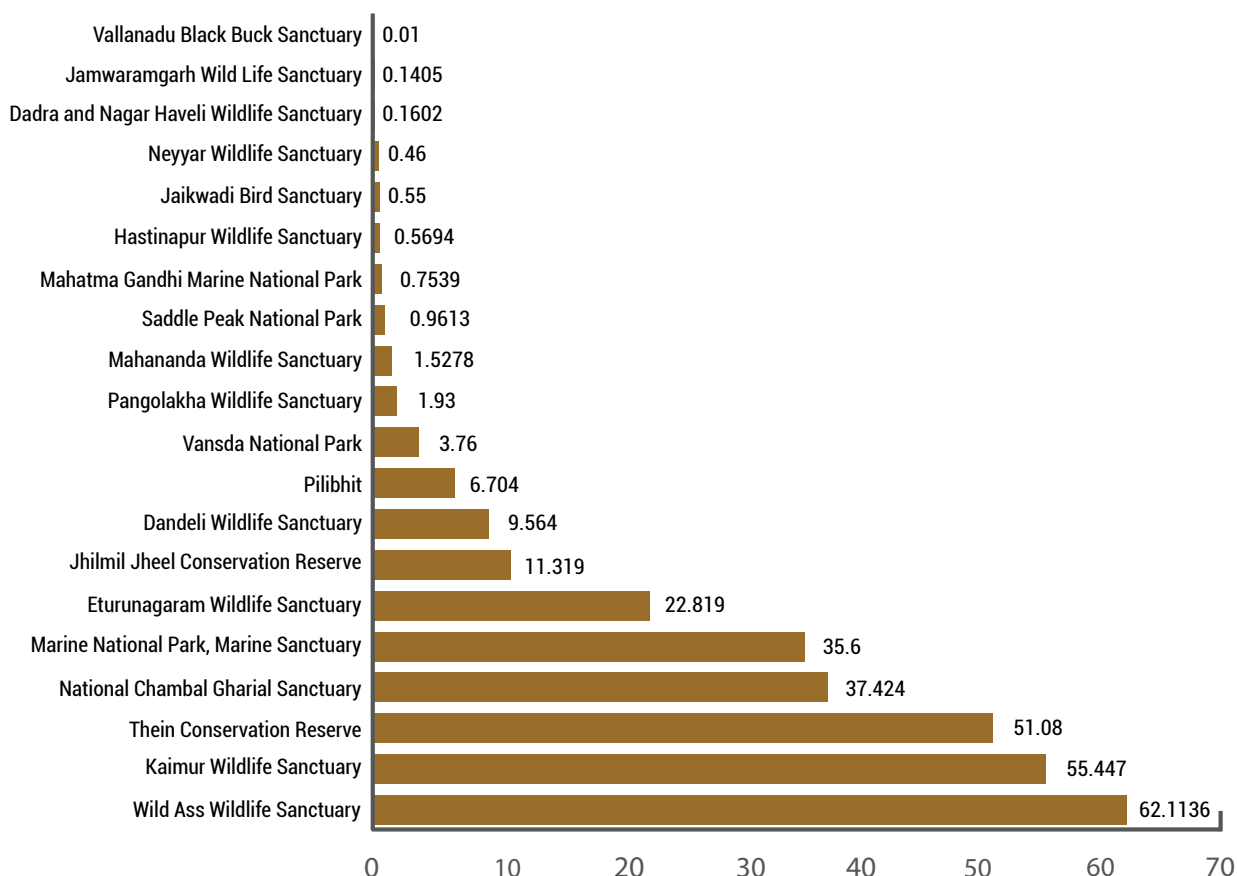


Figure 1: Impacted protected areas in the year 2021 (January-June)

Five projects were recommended passing through Wild Ass Sanctuary diverting a total area of 62.1136 ha. All these proposals were linear projects—two transmission lines, two pipelines and one road project. A transmission line has been approved which was applied as two projects in front of the committee. The transmission line runs from Lakadia to Vadodara and Lakadia Banaskantha. The extent of ESZ range of the Wild Ass Sanctuary is from zero to 1.2 kilometres only. An ESZ of such a small range will not serve the purpose of its creation.



The Standing Committee recommended Shahpurkandi Dam Project in Jammu and Kashmir diverting protected area land of Thein Conservation Reserve in Jammu and Kashmir. The total project area is 1,281.13 ha, is located on the river Ravi, where its northern side falls in J&K (624.67 ha) and southern side in Punjab (663.30 ha). The project diverts 275.16 ha forest land from Punjab which will cut down forest of 0.6 density which means forest cover of 60% canopy and 13.24 ha forest from J&K of 0.4 density. It also diverts 51.08 ha of protected area land from Thein Conservation Reserve. For locating the project in a Protected Area, the reason stated is that "the excess water of the River Ravi at present is going waste through the Madhopur Headworks downstream to Pakistan, implementation of the project would minimize such wastage of water" (Executive Engineer, Shahpurkandi 2021). The project lies close to the existing Ranjit Sagar Dam and upcoming Ujh Multipurpose Hydel project. The Ujh Hydel project also is located on Ujh tributary of river Ravi (Figure 2). **These three hydel projects together would put too much pressure on the Ravi River.** The project has been given approvals at various stages of clearance process stating that the project is of National Importance.



Figure 2: Google Earth image showing the Shahpurkandi Dam project, upcoming Ujh Hydel project and existing Ranjit Sagar Dam project on Ravi River



III.III DIVERSIONS WITHIN LINEAR CATEGORY

Linear projects mainly include road, railway, transmission lines, pipelines and canals. The maximum number of proposals were approved for diversion within the linear category. Linear diversion of the size 1,218.53ha was requested to be diverted, where all of it was given a go ahead. Linear projects accounted for 87.96 % of the total area approved. Of this, 248.7ha was diverted from protected areas and 947.96 ha was diverted from non-PA land.

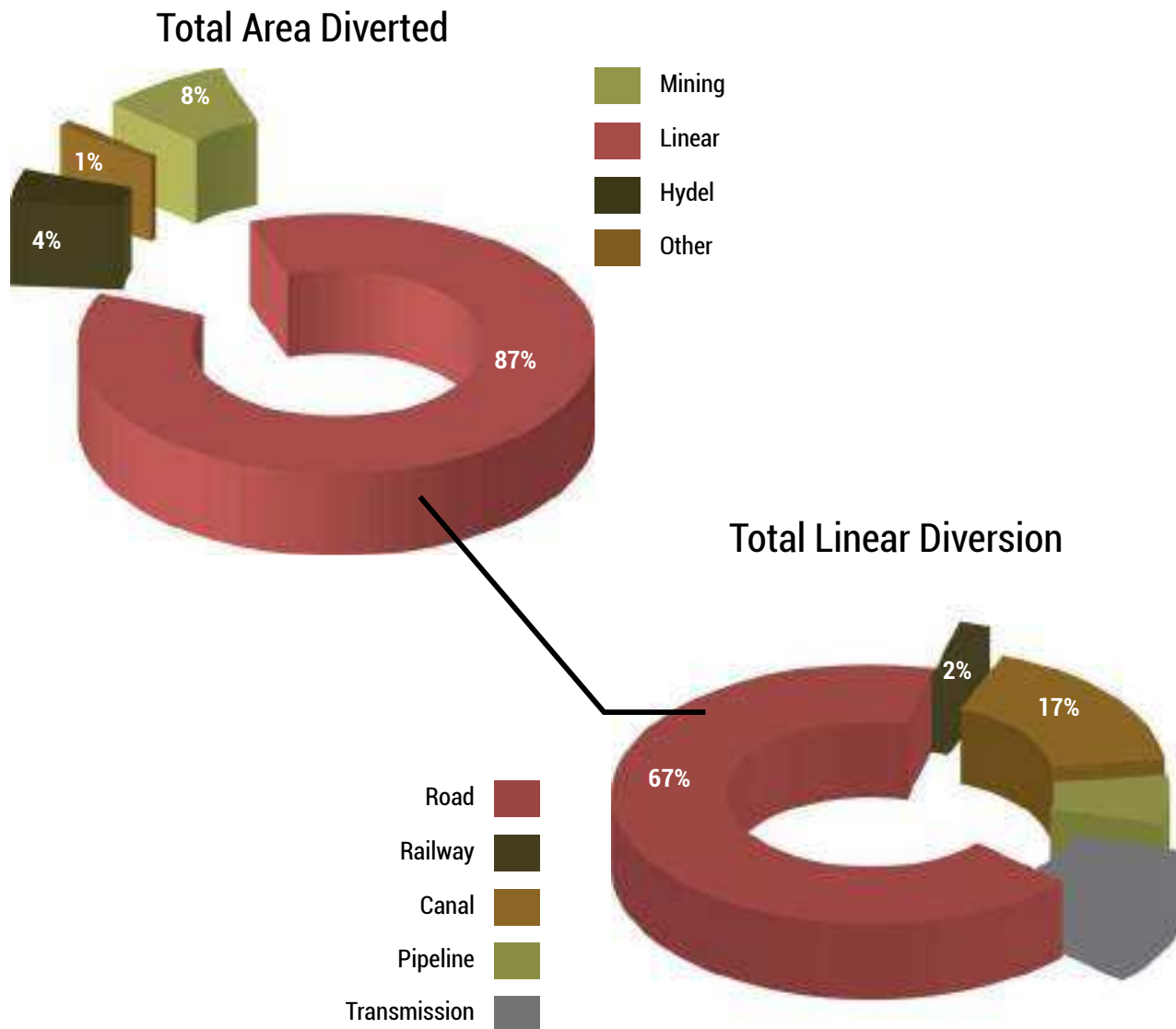


Figure 3: Linear Diversion approved during January - June 2021



The maximum diversion of 661.425 ha was approved for two linear category proposals in the state of Rajasthan, which were for the same project but divided and presented as two proposals. The proposals are for development of eight lanes (Greenfield Highway) from Itawa (Ch. Km 284.000) to Chambal River under Bharatmala Pariyojana. One of the proposals is near Banda Hera village, falls within the National Gharial Sanctuary diverting an area of 29.019 ha within the sanctuary and 1,222.741 ha outside the sanctuary. The other proposal is near Durjanpura village, for the diversion of 632.406 ha falling in the eco-sensitive zone of Ranthambore Tiger Reserve and Sawai Mansingh Wildlife Sanctuary. These proposed alignments pass through the Ranthambore Tiger corridor and National Chambal Sanctuary. The Ranthambore National Park, Sawai Mansingh and Sawai Madhopur wildlife sanctuaries are located at an approximate distance of about 12.9 km, 8.0km and 10.5 km respectively as per its pre-feasibility report. This will delineate migratory corridors of tigers as the diversion is in proximity of Ranthambore's tiger habitats. Multiple diversions from a single protected area are also a cause of concern here. Another project falling within the National Chambal Sanctuary was approved for construction of a Steel Girder Bridge, earthwork, approach road, workshop, site-office and store for Mathura - Jhansi 3rd Railway Line Project of Rail Vikas Nigam Limited in Dholpur district, Rajasthan. It will divert 8.405 ha of protected area land from the sanctuary.



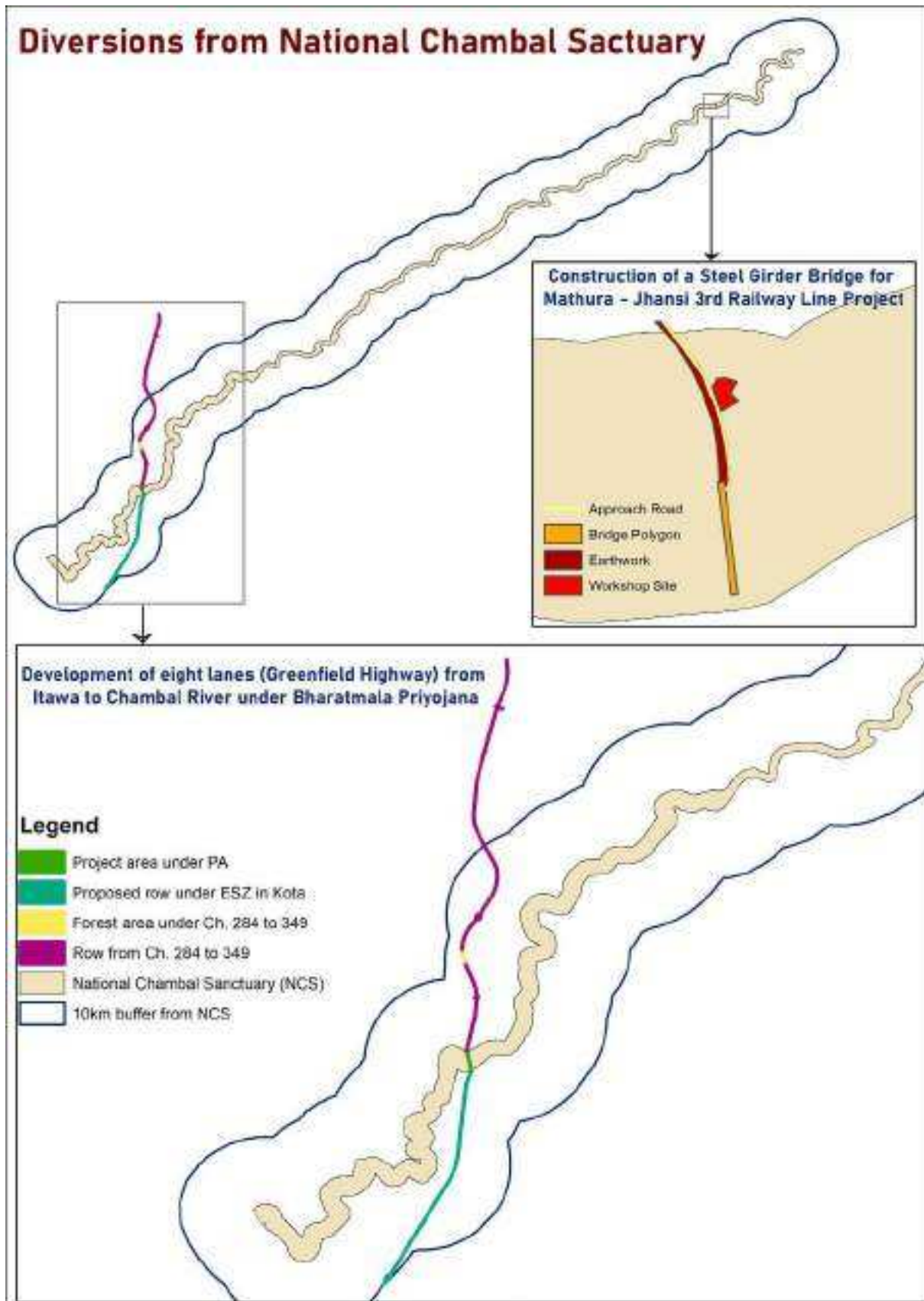


Figure 4: Project diversions falling within the National Chambal Sanctuary



The Tinaighat- Castlerock-Caranzol Railway doubling project was approved by the committee which entail diversion of 10.45 ha forest area, where 9.564 ha lies within PA in Dandeli Wildlife Sanctuary and 0.886 ha falls outside PA in Haliyal division. The project was granted Stage 1 on 4th Feb. 2021. The committee asked for a mitigation report to be prepared by the Wildlife Institute of India (WII) within a period of only two months. As per the report, "the Camera trap spanning 660 trap nights yielded 156 captures of 17 mammal species along the railway track. 203 animal signs through sign surveys of 175 habitat plots near the railway track were recorded. A total of 47 species of herpetofauna was recorded during the survey. This number is expected to be higher since the study was conducted within a short period during the non-breeding season." Despite the richness of biodiversity and wildlife in the area, the project was recommended. Wildlife Institute of India has a conflict of interest here as it prepared the mitigation report for the project as a consultant body and on the other hand was part of the decision making as it a member of the committee. The National Tiger Conservation Authority has raised serious concerns about the lack of cumulative impact assessment and splitting up the project into small forest patches to obtain speedy approval. Despite stiff opposition from the public, linear projects have been approved in areas which are also critical tiger and elephant areas.

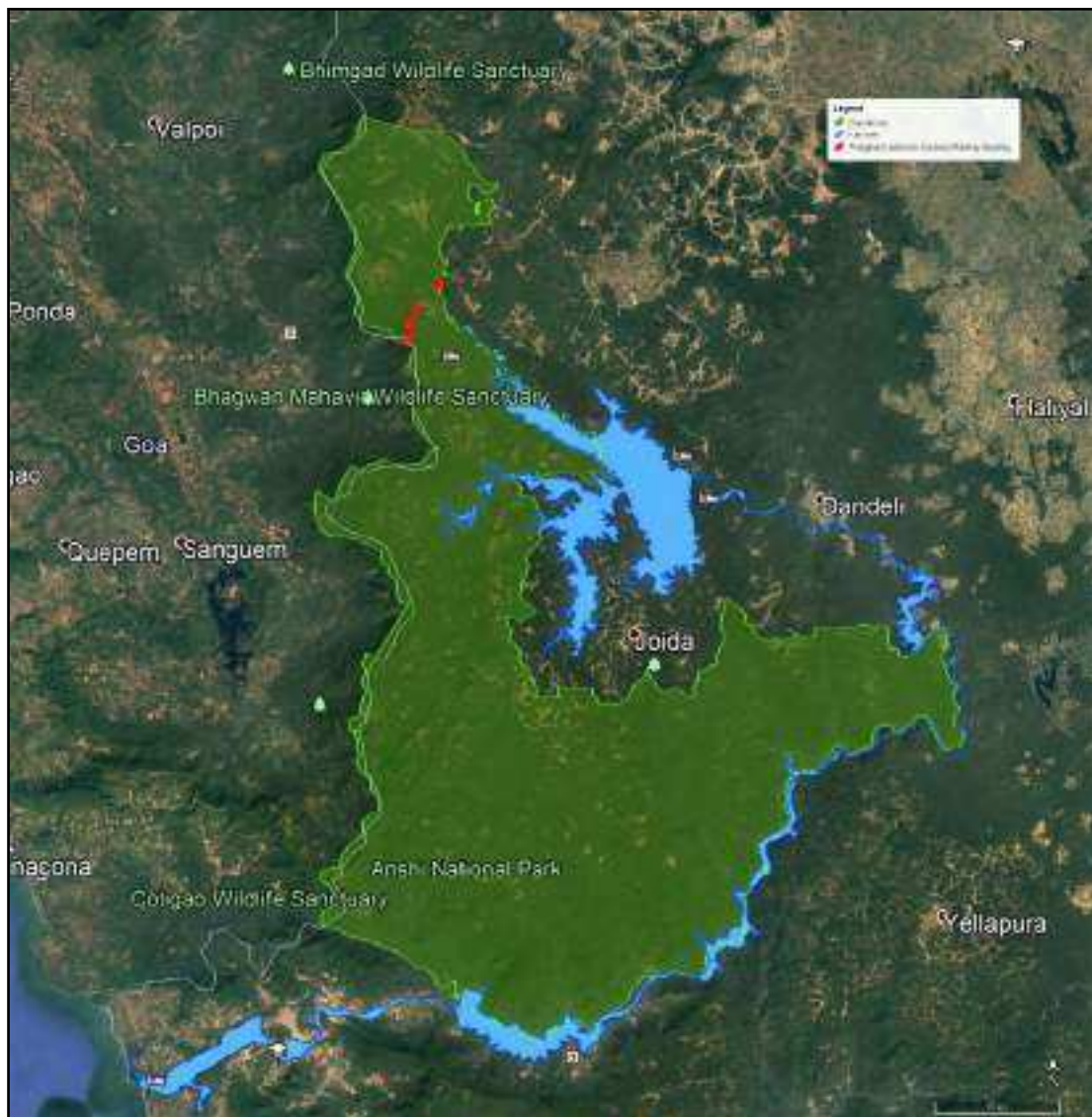


Figure 5: The Tinaighat- Castlerock-Caranzol Railway doubling project of 9.564 ha lies within Dandeli Wildlife Sanctuary, fragmenting the upper portion of the sanctuary into a separate patch



Another approval for 55.447 ha was given for Jaunpur Obra transmission line in Uttar Pradesh passing through Kaimur Wildlife Sanctuary. No alternatives were examined; rather a *fait accompli* situation was highlighted by the secretary during the meeting, where tenders are being issued without consulting forest department for alternatives. Despite knowing the fact that alternatives were not examined for placing the transmission line, Standing Committee approved the project and gave a condition for future proposals that they must accompany with a certificate from CEA that alternatives were considered and laying of multi-circuit transmission lines through the forest areas is not possible.

A linear project for construction of Chitegaon water supply scheme pipeline in Maharashtra was approved where the proponent had commenced work before approval. The project will divert 0.55 ha from Jaikwadi Bird Sanctuary. A penalty of 1% of the project cost was imposed on the proponent for the violation.



Box 2: A case of diluting the mitigation measures

The upgradation of Laldhang to Chilkhal road project was recommended in the 56th meeting of the SC-NBWL for strengthening and black-topping of old existing road from Chillarkhal to Laldhang passing through buffer zone of Rajaji National Park. National Tiger Conservation Authority (NTCA) had conditioned some mitigative measures, where one of them was to construct an elevated road with underpasses which should entail a permeable space of 705 m length and 8 m height for wildlife from the central stretch of 4.7 km from Chamaria bent to Siggadi Sot (SC-NBWL 2020a). The Chief Wildlife Warden in subsequent meetings repeatedly raised the issue of height of the underpass to be relaxed to 5m with length of 470 m (SC-NBWL 2020b). The Standing Committee had asked the ministry to constitute a committee comprising of Dr. Sukumar, representatives from NTCA, WII and NHAI and representative of Government of Uttarakhand to suggest site-specific mitigation measures based on inspection of the area.

In the 63rd meeting in June, Dr. Sukumar after carrying the inspection in March, 2021, suggested that a single underpass of 6 m height in the 4.7 km long stretch is sufficient at this stage to avoid putting a lot of concrete in the forest area. However, this is contrary to the guidelines by WII on "Eco-friendly measures to mitigate impact of linear infrastructure on wildlife" which mention regarding spacing of these wildlife crossings that it may be appropriate to install several structures in one location to reduce competition between individuals, travel time to a safe crossing and habituation time, as well as increase connectivity incrementally (Wildlife Institute of India 2016). Besides this, Minister of Forest, Uttarakhand was present during the meeting who gave his comments on the matter that "the cost for construction of 8 m high underpass would require Rs. 80 crore which govt. of Uttarakhand could not bear" and therefore, requested for the reduced measures. His presence in the meeting is questionable as the list of participants of the meeting does not contain his name (SC-NBWL 2021c). Standing Committee finally recommended the modification with reduced height of 6 m and length 400 m which is even 70 m lesser than what was asked. No justification was given by the standing committee for the further reduction in the length from 470 m to 400 m. This shows the careless approach of the Standing Committee towards mitigative measures.

III.IV DIVERSION WITHIN ECO-SENSITIVE ZONES (NON-PA)

The SC-NBWL does not statutorily have explicit jurisdiction to decide for projects which are not located within PAs. However, by virtue of the Supreme Court order in Goa Foundation Vs Union of India⁸, all states are directed to declare ESZs around national parks and sanctuaries. Till the ESZs are declared, the SC-NBWL is to consider all projects which require Environmental Clearance under the EIA Notification, 2006 located within 10 kms from the boundary of national parks and sanctuaries. Once ESZs are declared, there is no requirement for the projects to be referred to the committee.

08. Order dated 4.12.2006 in W. P No 460 of 2004.



The National Wildlife Action Plan (NWAP) 2002-2016 indicates, "Areas outside the protected area network are often vital ecological corridor links and must be protected to prevent isolation of fragments of biodiversity which will not survive in the long run. Land and water use policies will need to accept the imperative of strictly protecting ecologically fragile habitats and regulating use elsewhere". The NWAP also says, "all identified areas around protected areas and wildlife corridors to be declared as ecologically fragile under the Environment (Protection) Act, 1986" (Guidelines for declaration of Eco sensitive Zones 2011). Therefore, all the proposals that fall either within a notified Eco-sensitive zone (ESZ) of a sanctuary or if the ESZ is not notified then fall within 10km aerial distance from the sanctuary boundary, are subject to a certain level of protection with only specific activities allowed under regulation.

Nevertheless, the standing committee of NBWL has ignored this and repeatedly allows diversion of ESZs, whether they are forest or non-forest land. In this first half of 2021 alone, the committee has approved diversion of 386.14 ha from ESZs, where 100.47 ha is forest land and rest 285.66 ha is non-forest land. The following chart shows the area diverted from the respective Eco-Sensitive Zones of these protected areas.

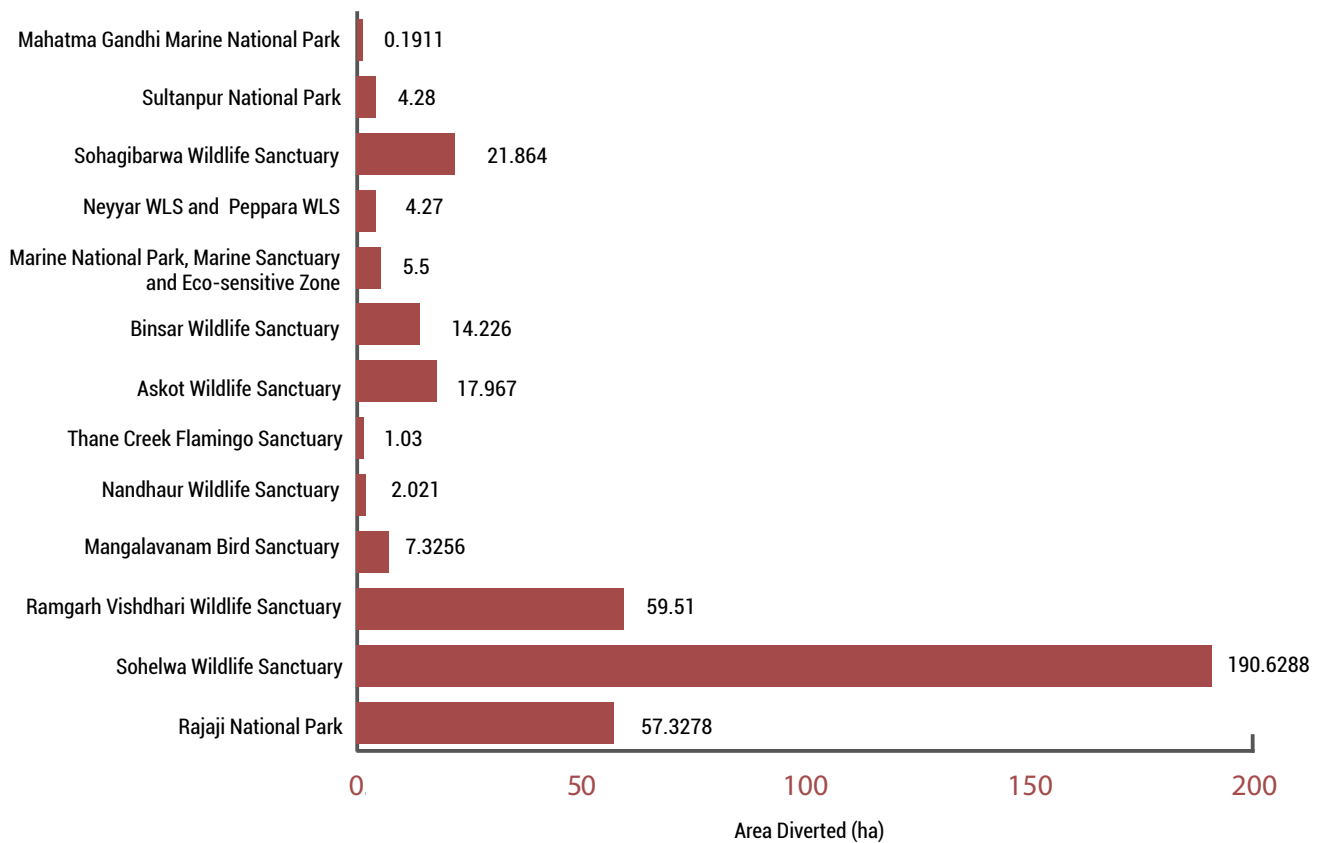


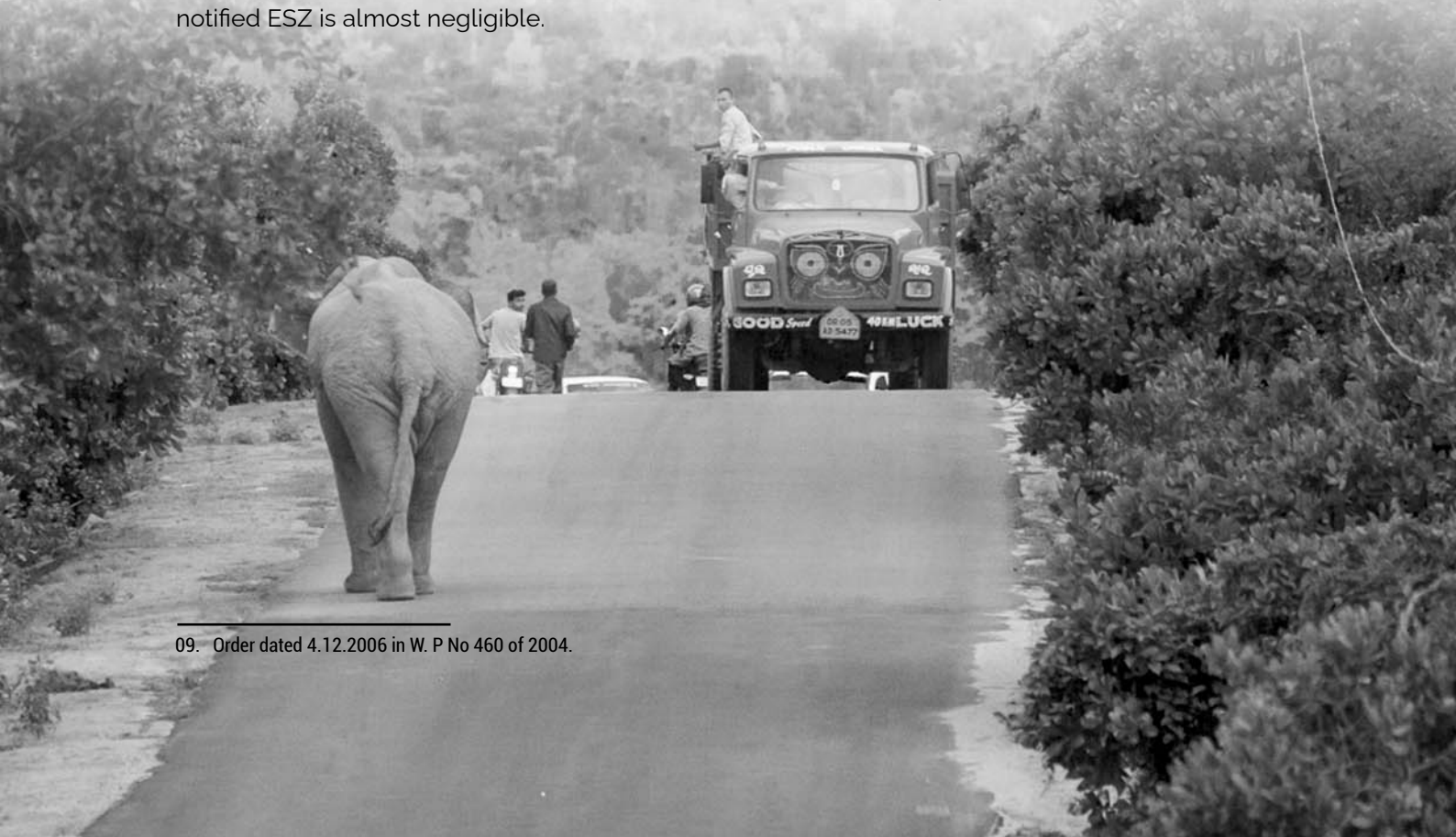
Figure 6: Diversions approved by SC-NBWL for projects falling under eco-sensitive zones of protected areas



The largest diversion has been approved from the ESZ of Sohelwa Wildlife Sanctuary in Uttar Pradesh. Two projects diverting a total area of 190.63 ha pass through the ESZ of this sanctuary. One project is for construction of bridge for proposed Rapti Canal on Tulsipur-Jarva road for which 116.43 ha will be cleared. The other project was for construction of canal passing through forest land in villages Thakurapur, Jamdhara and Sugaon in district Balrampur under National Saryu Nahar Pariyojna (Rapti Main Canal). This project's 74.2 ha area lies in the ESZ of the sanctuary and 97.8 ha falls outside the ESZ. The Sohelwa Wild Life Sanctuary is habitat for tiger, leopard, hyena, jackal, fox, wolf, bear, deer, sambar, chital, hog deer and kakad etc. (MoEF&CC 2017).

SC-NBWL approved the expansion of silica sand opencast mine lying 3.6 km from Ramgarh Vishdhari Wildlife Sanctuary. The project diverts 59.51 ha area from the ESZ of the Sanctuary. Draft notification of the Ramgarh Vishdhari Wildlife Sanctuary dated December 30, 2020 prohibits following activities in its eco-sensitive zone- "All new and existing mining (minor and major minerals), stone quarrying and crushing units shall be prohibited with immediate effect except for meeting the domestic needs of bona fide local residents including digging of earth for construction or repair of houses within Eco- sensitive Zone". First thing to note is that the mine already exists and has come for expansion, which instead of pointing and taking action against it, the expansion was given recommendation to the prohibited activity by the committee.

A project was approved for laying of sub-marine pipeline from Rutland Island to Phongibalu, South Andaman Island for augmentation of potable water supply in the Port Blair township which uses 0.7539 ha from Mahatma Gandhi Marine National Park and 0.1911 ha from its "Notional"⁹ ESZ. During the deliberations in the Standing Committee meeting, the Member Secretary stated that "the project outside the protected area does not require environmental clearance and therefore, the mandate of the Standing Committee is to consider the project falling inside the National Park only". The ESZ as per its draft notification has an extent of 0 (zero) to 100 meters only around the boundary of Mahatma Gandhi Marine National Park. The sanctuary is home to 19 species of reptiles recorded, which include 4 species of turtles, 10 species of snakes, 4 species of lizards and a species of salt water crocodile (*Crocodylus porosus*). It also provides ideal feeding and breeding grounds for the sea turtles, designated as one of the endemic bird areas of the world. It supports coral reefs, 282 species of fishes (MoEF&CC 2020b). With such rich biodiversity in the sanctuary, its ESZ has its extent defined to only 100 m. This puts the wildlife in the area in a more vulnerable position, where the committee refuses to consider projects falling in the notional ESZ and the notified ESZ is almost negligible.



09. Order dated 4.12.2006 in W. P No 460 of 2004.

III.V DIVERSIONS WITHIN TIGER HABITATS

In India, tigers act as an umbrella species for majority of eco-regions as they reside in a wide variety of habitats extending from the mountains, mangrove, tall grasslands, to dry and moist deciduous forests, as well as evergreen forest systems (Jhala, Qureshi and Nayak 2020). This section deals with approvals given by the SC-NBWL to projects proposed within tiger habitats. For this analysis, the term “tiger habitats” includes tiger reserves notified under the provisions of Wildlife (Protection) Act, 1972 (as amended in 2006), and forest lands lying contiguous to notified tiger reserves. These forest lands may serve as important corridors for movement of tigers and other wildlife. Given this definition, projects within tiger habitats, therefore, include the following (i) projects within notified tiger reserves and (ii) projects proposed over forest lands which lie contiguous to the notified tiger reserve. The current condition of tiger habitats in India reflects a highly vulnerable state of our national animal. The contiguity of tiger habitats has severely been affected by approvals for developmental projects over the years which has led to tigers living in isolated Tiger Reserve patches, consequently losing on their connectivity with other areas. Landscape connectivity plays a significant role in conserving the species which maintains the gene flow and influences the rate of genetic diversity (Joshi, et al. 2013). Fragmentation of landscape affects the population viability as adult tigers have wide territory, and requires disruption free movement. In the four meetings conducted so far this year, SC-NBWL has diverted 780.24 ha under only nine projects from tiger habitats in 2021.

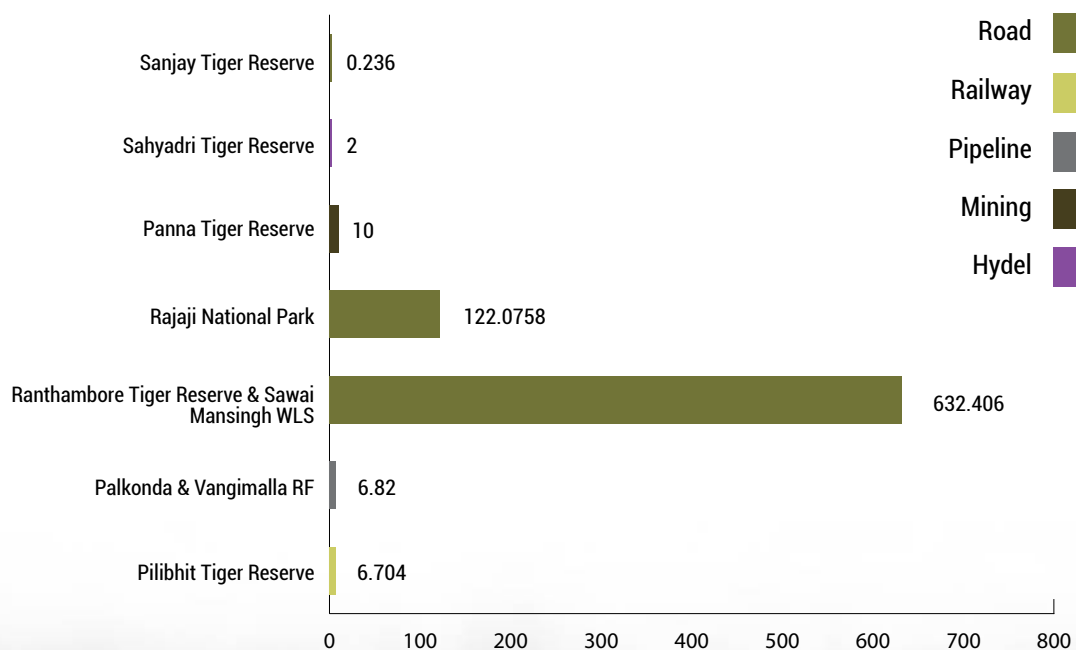
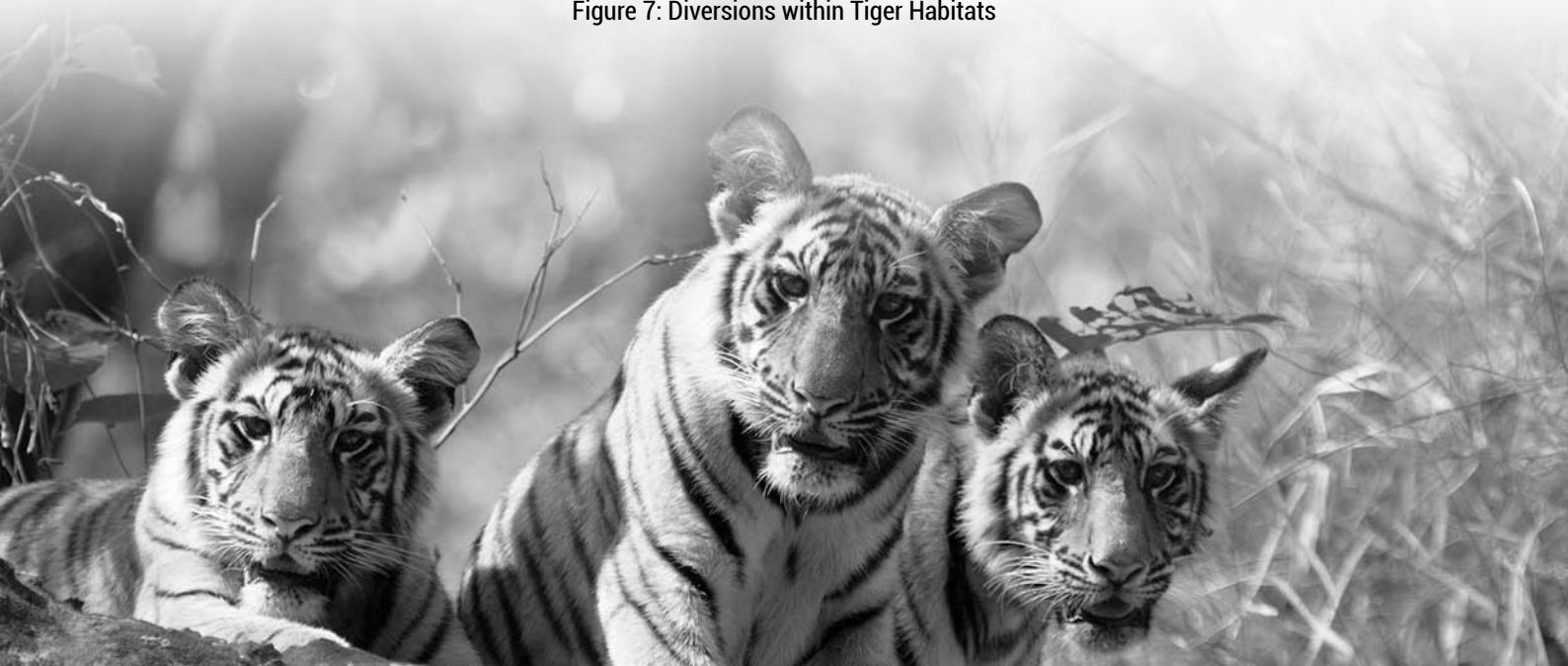


Figure 7: Diversions within Tiger Habitats



RANTHAMBORE TIGER RESERVE

This proposal has already been discussed in the earlier section of linear diversions in this report as the project also passes through National Chambal Sanctuary. The project alignment is near Durjanpura village for the diversion of 632.406 ha falling in the eco-sensitive zone of Ranthambore Tiger Reserve & Sawai Mansingh Wildlife Sanctuary. The Ranthambore National Park, Sawai Mansingh and Sawai Madhopur wildlife sanctuaries are located at an approximate distance of about 12.9 km, 8.0km and 10.5 km respectively. The placement of this linear diversion between the Chambal River and Ranthambore Tiger Reserve would create obstruction in the migratory path of wildlife moving from the protected area towards the river.

PANNA TIGER RESERVE

A diamond mining project in Panna, Madhya Pradesh came for renewal of clearance earlier granted in 2006 under WPA, 1972 and to increase the periphery of mining pit within the lease area by 10 ha. As per its previous environmental clearance granted, the project has approval for diversion of a large area of 275.963 ha from the Gangau Sanctuary and Panna Tiger Reserve. The project has been justified that "the project has already been operating in the area since 1968 even before the Wildlife (Protection) Act, 1972 came into force. There are no alternative areas in the immediate vicinity under NMDC with diamond reserves of sufficient quantity" (Project Manager 2019). The wildlife report under the online application for the project available on Parivesh website while disclosing whether forest clearance is required for the project, it denies for it. However, as per the minutes, part of the application is to increase the periphery of mining pit within the lease area by about 10 Ha, where its 1.5 Ha falls inside forest area. Faculty of Engineering and Technology, AKS University, Satna, Madhya Pradesh had conducted a study on flora and fauna along the water bodies for the project. The report mostly focused on the flora around water bodies of the area. However, the study does not talk about the fauna present in the area. The fact that the project site is placed adjacent to Panna Tiger Reserve and forms part of Gangau Wildlife Sanctuary, and the probable impacts on wildlife present in the surrounding were not discussed while granting approval.





Figure 8: Location of diamond mine near Panna Tiger Reserve

RAJAJI TIGER RESERVE

A project includes diversion of an area of 64.748 ha for four-laning of Haridwar-Nagina section of NH-74 in Uttarakhand. Of the total project area, 11.32 ha falls within the Jhimil Jheel Conservation Reserve, which is a protected area as per the WLPA, 1972. The rest of the area falls in the Eco-sensitive zone (ESZ) of Rajaji Tiger Reserve and forms part of tiger corridor connecting the Tiger Reserve with the Conservation Reserve. Another project which was considered in the meeting for modification is the above-mentioned Laldhang-Chillarkhal road project, which also passes through the ESZ of Rajaji Tiger Reserve diverting an area of 7.7 ha. Both the upgradation of Haridwar-Nagina road and Laldhang-Chillarkhal road projects which were approved falling within tiger habitats, lie in the vicinity of Rajaji Tiger Reserve, affecting important tiger and elephant corridors are shown in figure 8. Further, two more proposals were approved of: a project for improvement, upgradation and construction of Ganeshpur- Dehradun road section, wherein one part of it lies in the state of Uttar Pradesh and other part lies in Uttarakhand and falls in the ESZ of Rajaji National Park and Elephant reserve area of Shivalik Forest Division. The project site is just adjacent to the national park boundary lying exactly where the national park ends in the sensitive transition zone. It is a linear diversion passing from the centre of the Shivalik forest division, fragmenting the entire migratory path of tigers and elephants. As per its Site Inspection Report (SER) by the Conservator of Forest (CF), "the area has an abundance of wildlife including red junglefowl, kalij pheasant, Himalayan goral, barking deer, Indian crested porcupine, rusty spotted cat, Asian palm civet, yellow-throated marten, masked palm civet, leopard cat, leopard, Asian elephant, etc." Upgradation of this road is in violation of the recommendations of the Sub-Committee on Guidelines for Roads in Protected Areas (MOEF&CC 2014). The Sub-Committee recommends that roads passing by National Parks/ Core-Critical Tiger Reserve/Wildlife Sanctuary are within a radius of 1 km thereof, or within the



Eco-Sensitive Zone, whichever of the two is lesser; the roads could be maintained and repaired in the best manner possible in their current form and present width. No widening or upgradation is to be allowed.

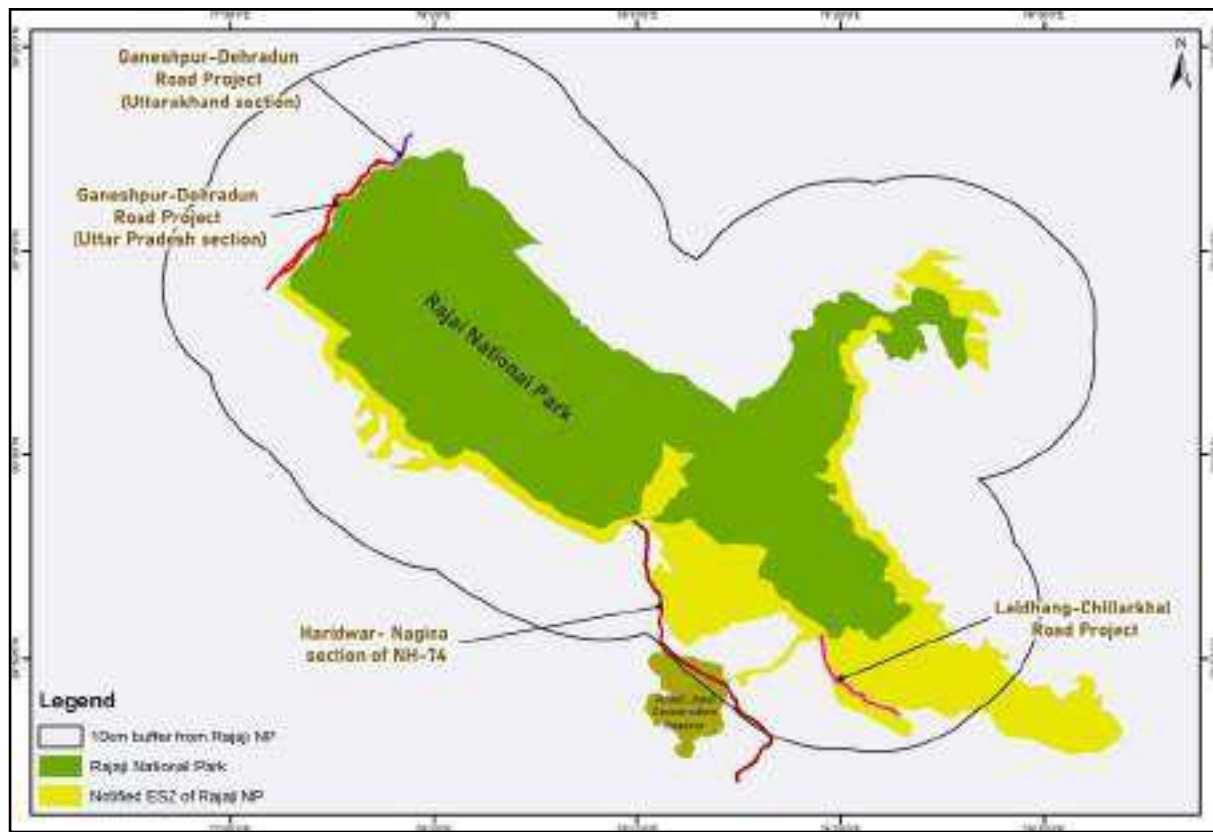


Figure 9: Multiple diversions approved near Rajaji Tiger Reserve

SANJAY TIGER RESERVE

A project diverting 0.236 ha forest area from the core and buffer zone of Sanjay Tiger Reserve for black-topping of existing road from Belaha Mahua to Naudhiya Devarth over a total area of 0.415 ha was approved. The justification for passing the project through its core and buffer area is that the road is necessary to provide connectivity to villages situated in the interior place of the tiger reserve since ancient times. The project is for black-topping only and one of the conditions imposed by NTCA clearly states that no widening of the existing road is permitted. If such is the case, then there should not be any requirement for forest land diversion for the project.



III.VI POLICY DECISIONS

The committee took three policy change decisions in first half of 2021. Firstly, a recommendation was given by the committee for providing Guidelines on Ecotourism in Forest and Wildlife Areas 2021. As per the guidelines "these are aimed at promoting better understanding of nature and wildlife conservation while generating income and opportunities for the local communities in an ecologically, culturally and economically sustainable manner. The objectives of these guidelines include promotion of low impact nature tourism, traditional ecological knowledge and heritage values of India's wilderness, engagement of local communities in nature tourism partnerships amongst various stakeholders and finally enhancing India's potential as a global eco-tourism destination." (SC-NBWL 2021b) The Forest Advisory Committee (FAC) was asked to examine the guidelines further with respect to the Forest (Conservation) Act, 1980, where the FAC in February 2021 diluted the norms for ecotourism by allowing them to build "non-permanent" structures in protected areas without permission from the central government and permanent structures will be considered to be "non-forestry" activity and therefore would require clearance under the FC Act, 1980 (Nandi 2021). Such a decision may result in further fragmentation of forest areas, by opening up the protected space of wildlife for non-permanent structures. Even construction of permanent infrastructure for creation of ecotourism activities is not a distant reality as the FAC rarely rejects proposals.

Secondly, the committee recommended for the inclusion of Caracal species under Recovery Programme for Critically Endangered Species. Caracals are medium size wild cats found largely in Rajasthan, Gujarat and Madhya Pradesh (The Economic Times 2021). This decision has been taken to consider the Caracal species into the list of critically endangered species for taking up conservation efforts with financial support under Centrally Sponsored Scheme-Development of Wildlife Habitat. This is the 22nd wildlife species under this recovery programme for critically endangered species. International Union for Conservation of Nature (IUCN) has listed the Caracal species of "least concern" due to its abundance in Africa. However, in India, the species is under threat and listed under Schedule I of the Wildlife (Protection) Act 1972, and therefore needs a specific conservation plan.



The third recommendation was an advisory on Human Wildlife Conflict Mitigation. The advisory provides prescriptions for the States/ Union Territories for dealing with Human-Wildlife Conflict (HWC) situations and seeks expedited inter-departmental coordinated and effective actions (MoEF&CC 2021b). The decision empowers gram panchayats in dealing with problematic wildlife creating human-wildlife conflicts as per the section 11 (1) (b) of Wild Life (Protection) Act, 1972.

The section 11 (1) (b) provides statutory powers to the Chief Wild Life Warden (CWW) or the authorised officer where, if he is satisfied that any wild animal specified in Schedule II, Schedule III, or Schedule IV, has become dangerous to human life or to property (including standing crops on any land) or is so disabled or diseased as to be beyond recovery, by order in writing and stating the reasons therefore, permits any person to hunt¹⁰ [such animal or group of animals in a specified area or cause such animal or group of animals in that specified area to be hunted]. This decision is not practical to empower gram panchayat as it can be more misused than solving the issue.

Further the advisory will include identification of areas where the incidences of Human Wildlife Conflict are high and the mitigation measures particularly fodder and water augmentation should focus on these priority areas. The funds from Pradhan Mantri Fasal Bima Yojna to be utilized for crop compensation against crop damage due to HWC.



10. Subs. by s. 9, *ibid.*, for "such animal or cause such animal to be hunted" (w.e.f. 1-4-2003).

IV. EMERGING CONCERNS

DE-NOTIFICATION OF PROTECTED AREA

Reiterating as said in the report's previous section of denotification, the Wildlife (Protection) Act, 1972, does not have any provision regarding the de-notification of a protected area, and therefore the National Board for Wildlife or the Standing Committee does not possess any statutory power to de-notify (delete) any protected area. On the contrary, the SC-NBWL has been completely de-notifying many sanctuaries and removing large chunks from protected areas under boundary alteration/rationalization. In 2021, it has approved de-notification of 13,855.784 ha of PA in total from four wildlife sanctuaries, where Galathea Bay and Megapode Sanctuaries were completely de-notified. However, an area of 19,785.50 ha was added to the Bandh Baretha Sanctuary.

APPROVAL WITHOUT SITE INSPECTIONS

Despite the lockdown and restrictions during the pandemic, a large number of approvals were granted by the committee last year and this year as well. The meetings were held via video conferencing where deliberations for projects were limited and often skipped field visits. Some projects required on ground inspection which could not be done in these Covid restrictions. The committee was found recommending such proposals in a rush without conducting site inspections. Such an instance is the approval to Jaunpur Obra transmission line in Uttar Pradesh passing through Kaimur Wildlife Sanctuary. In earlier deliberations for the project, the committee had opined that technological feasibility of bunching the transmission lines passing through the protected area to be examined as many transmission lines already exist in the area. The site visit could not be accomplished due to the pandemic but the project was recommended based on a meeting held between DGF, SS, officials from Central Electricity Authority (CEA) and Power Grid Corporation of India Limited.

MULTIPLE PROPOSALS FOR A SINGLE PROJECT

Projects appear before SC-NBWL for approval in multiple proposals, which conceals the actual area and impact of the project. The cumulative impact of each project can be detrimental for wildlife and flora of the region, which the committee fails to identify or chooses to overlook. It often considers projects as separate proposals instead of looking at a single project comprehensively. Secondly, if a project is presented in parts, and its each part area is below 50 ha, then the proponent is not required to prepare a wildlife conservation plan for the project.

The Ganeshpur-Dehradun road project was presented as two separate proposals, one for the section lying in Uttar Pradesh and other section lying in Uttarakhand. The committee had approved both the projects and there was no discussion regarding the projects being a single project while recommending it, nor was its cumulative impact analyzed.

Similar is the case of National Chambal Sanctuary as discussed earlier in the report where the committee did not take into account the cumulative impact of approvals of three projects adding up to an area of 669.83 ha for three linear proposals. Two were for development of eight lanes (Greenfield Highway) from Itawa (Ch. Km 284.000) to Chambal River under Bharatmala Pariyojana where one of the proposals (29.019 ha) falls within the National Gharial Sanctuary and the other proposal (632.406 ha) falls in the eco-sensitive zone of Ranthambore Tiger Reserve & Sawai Mansingh Wildlife Sanctuary. These two road projects will delineate migratory corridors of tigers between Ranthambore's tiger reserve and the National Chambal Sanctuary. Another project (8.405 ha) falling within the National Chambal Sanctuary was approved for construction of a Steel Girder Bridge, earthwork, approach road, workshop, site-office and store in Dholpur district, Rajasthan.



WII UNDER CONFLICT OF INTEREST

The Wildlife Institute of India (WII) is a statutory member of the committee of the National Board for Wildlife. Despite this fact, it has been observed that the WII prepared mitigation plans for the project with the funding received from the proponents, prior to approval of the project. This indicates a conflict of interest on the part of WII, as neither the proponent nor WII discloses this during the meeting for appraisal of project. An example of such an incidence is the laldhang-chillkhal road project where WII acts as both a consultant as well as the regulator granting clearance.

In a similar instance, the project for improvement, upgradation and construction of Ganeshpur-Dehradun Road section, WII acted both as a consultant as well as the regulator granting clearance. As NHA's consultant, WII conducted a "Rapid Assessment of Wildlife and suggested mitigation measures of Delhi Dehradun Highway in the Shivalik Hills" and it also acted as a regulator/decision maker as the Director of the WII is part of the Standing Committee of the National Board for Wildlife which recommended the project for grant of Wildlife clearance in its meeting dated January 5, 2021. Such a conduct vitiates the entire process of grant of clearance.

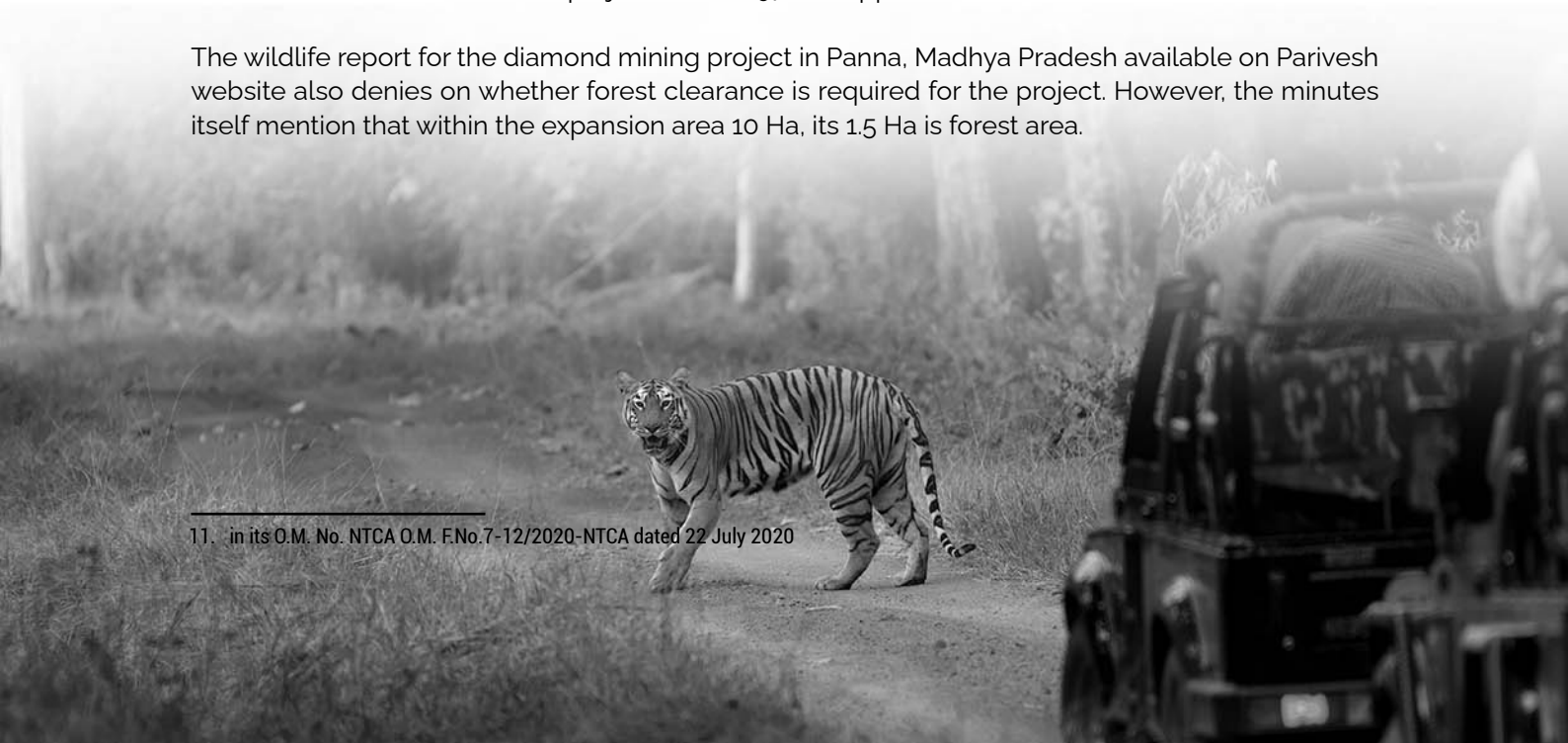
Another such incident is the project for Tinaighat-Castlerock-Caranzol Railway Doubling Project of Railway Vikas Nigam Limited for doubling the existing railway track between Hospet, Tinaighat and Vasco Port, Karnataka. The project was also granted Stage 1 Forest Clearance on 4th Feb. 2021. NTCA took a note of the fact that Dr. R Sukumar being a member of the National Board for Wildlife, cannot conduct the study. Dr. Sukumar had recused himself from the decision to avoid conflict of interest. However, NTCA¹¹ requested WII to undertake the task of proposing mitigation measures for the proposed railway track doubling project. This is again case of conflict of interest on the WII's conduct by preparing studies for the proponent before approval.

MISLEADING INFORMATION IN ONLINE APPLICATIONS

There are many instances where the information uploaded under the online application on the Parivesh website of MOEF&CC is misleading. As per the wildlife form's point number A1 (i), the project proponent has to disclose if Forest Clearance is required for the project. It has been observed under several instances that projects which involve forest diversions have said 'no' in this section of the form. This means that the proponent claims that the project area does not include any forest land. However, on further checking of the project details, forest area involvement was found which makes it mandatory for the proponent to take forest clearance under the Forest (Conservation) Act, 1980. An example is a diversion approved from Wild Ass Sanctuary for pipeline project from Kandla to Gorakhpur, Gujarat where the online application says no for forest clearance required but the minutes itself mention that the project area 8.0976 ha applied for clearance is forest area.

The wildlife report for the diamond mining project in Panna, Madhya Pradesh available on Parivesh website also denies on whether forest clearance is required for the project. However, the minutes itself mention that within the expansion area 10 Ha, its 1.5 Ha is forest area.

11. in its O.M. No. NTCA O.M. F.No.7-12/2020-NTCA dated 22 July 2020



V. CONCLUSION

India being a signatory to the Convention on Biological Diversity, is under the legal obligation to fulfil the targets decided under this convention. India in its sixth submission of the implementation of National Biodiversity Targets proclaimed progress to be on track. However, the fact is that the protected area land is lost every year due to the decisions taken by our Standing Committee of National Board for Wildlife without comprehending the adverse effects of their decisions on the ecosystems associated with the project. Besides diverting 1,385.34 ha land from protected areas this year, de-notification of protected areas from four sanctuaries has taken place. Further, among the diverted area, 780.24 ha was from tiger habitats.

A close look at the minutes of the meeting of the Standing Committee shows that diversion approvals are not backed with reasons on the project's benefit to wildlife. "Under the law, the Standing Committee has the discretion to allow or reject projects which it considers as detrimental to wildlife. This discretion must be exercised solely to meet the objective of the wildlife act which is conservation and protection of wildlife" (Dutta 2021). However, there are projects which can prove to be disastrous for the wildlife which have been permitted by the committee. Meanwhile, rejection of any proposals has not occurred in a long time. Rather, a strategized method of speeding the clearance process has been observed by de-notifying protected areas. Multiple diversions in one protected area also get approved, which is a major cause of concern for the integrity of the protected area. The diversions have left protected area as isolated patches disrupting the migratory path and gene flow between them.

The committee is inclined towards promoting infrastructural growth at the cost of great ecological diversity and rich forests in wildlife sanctuaries and national parks. The mega-city project of NITI Ayog for holistic development of Nicobar Islands is an example where this development is at the cost of keystone species of the area like leatherback turtles, saltwater crocodiles, megapodes etc. Because of the project, three sanctuaries of Andaman and Nicobar Islands became victims of the de-notification stroke of the committee.

The committee's assertiveness was observed towards diluting the clearance procedure by allowing biodiversity assessments for shorter spans and allowing projects to move further without site inspections for the projects. Further recommendations were granted to projects which did not prepare any conservation plan for the flora and fauna of the region. The recommendation is followed by condition to prepare site specific conservation plan. Under this approach, the fate of wildlife and flora lies on the compliance of the condition by the proponent. Even if the proposed plans lack necessary aspects, there is no scope for review of the plan if the project has already been recommended. The committee is seen promoting an accelerated appraisal system without acknowledging biodiversity value of the associated ecosystems and resource sustainability.



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Endnotes:

- i. Projects get deferred under circumstances where the proponent lacks in fulfilling the prerequisites. Deferred projects get considered in subsequent meetings when the proponent submits the required information.
- ii. Projects get delisted when even after getting deferred multiple times, the proponent fails to submit required information or the committee is not satisfied with the information provided. After delisting the project can be relisted once the proponent furnishes the information.





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India's Biological Diversity Act 2002: An act for the new millenium

The Biological Diversity Act 2002, recently enacted by the Indian parliament, is a significant, indeed, a pioneering piece of legislation. It responds to a number of new, emerging concerns: firstly, the result of new developments in technology, in particular, biotechnology and information technology, and, secondly, the ongoing degradation of the environment, inevitably accompanied by an erosion of biological diversity. These developments imply that all organisms, even seemingly insignificant ones like microbes, worms, weeds and mice, are potentially resources of considerable economic value, worthy of efforts at conservation, scientific investigation, and of securing rights over the associated intellectual property. This has prompted the development of two often conflicting international agreements, the Trade Related Intellectual Property Rights provisions (TRIPS) of GATT and the Convention on Biological Diversity (CBD). The latter has two notable stipulations. One is the sovereign right of countries of origin over their genetic and biological diversity resources. The other is the acceptance of the need to share benefits flowing from commercial utilization of biological diversity resources with holders of traditional knowledge and practices of conservation and sustainable utilization of these resources. There is as yet no proper resolution at the international level of how these will be implemented in view of the fact that the normal Intellectual Property Rights and TRIPS provisions do not stipulate any sharing of benefits for holders of knowledge in public domain, nor the sovereign right of countries of origin over their genetic and biological diversity resources. TRIPS even includes intellectual property rights over microorganisms and plant varieties. The Biological Diversity Act 2002 is a part of the Indian attempt to make some progress and to operationalize the two important provisions of the Convention on Biological Diversity.

This ambitious act aims to promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources, including habitats, cultivars, domesticated stocks and breeds of animals and micro-organisms. With this in view it provides for the establishment of a National Biodiversity Authority, State Biodiversity Boards and Biodiversity Management Committees at the level of Panchayats (village committees) and Municipalities. It was initially designed as an umbrella act, and as a herald of a new age it would have overridden many of the earlier acts such as the Forest Act designed in the colonial era. As passed, however, it only has the status of a complementary act and will have to be operated side by side with a whole range of other acts, including, in particular, those pertaining to forest, wild life, panchayati raj (village governance) institutions, plant varieties and farmers' rights, and patents. There are a number of potential conflicts in the working of these various acts that need to be resolved carefully to ensure that the Biological Diversity Act 2002 can effectively address the many new and significant challenges resulting from scientific and technological developments and from the growing strength of India's panchayati raj institutions. In particular, one needs to guard against the many entrenched interests ensuring that the National Biodiversity Authority and the various State Biodiversity Boards end up being ineffectual because of the provision in the Act that they must accept all directives of the Central and State Governments. There are other possibilities, too, of loopholes that may render the act toothless. For example, any biological resource that is considered a commodity, or biological material that is blended and mixed, may be exempted from the provisions of the act. Finally, there is always a danger that the regulations may merely breed harassment and corruption, rather than effective action. It is to be hoped that public awareness and pressure will overcome these hurdles.

This Act is an important step in the attempts to assert the sovereign rights of the people of India over their genetic and biological diversity resources, and to claim a share of benefits flowing from

commercial utilization of biological diversity resources including the use of any associated knowledge of Indian origin, even if it be in the public domain or held as a part of an oral tradition. There could be several difficulties in carrying out these intentions. No international agreement has as yet been arrived at as to how to put into effect the relevant provisions of the Convention on Biological Diversity. Even if such an agreement is arrived at, the United States of America may not accept it, as it has not signed the CBD. Furthermore, the CBD recognizes sovereign rights of countries over biodiversity resources for which they are the countries of origin, and not over all biodiversity resources occurring within the country as provided in the Biological Diversity Act 2002. India is the exclusive country of origin for only a fraction of biodiversity resources occurring within the country. It is the country of origin for a larger fraction along with a host of neighbouring countries such as Sri Lanka, Pakistan, Nepal, China and so on. So far, there have been no attempts to work out any co-operative agreements on this issue with our neighbours, although Pakistan was notably in sympathy with India in the dispute relating to Basmati rice. The CBD also mentions sharing benefits in the context of knowledge associated with biodiversity resources only for indigenous communities and not all communities, nor does it mention classical knowledge such as contained in Ayurvedic texts. Since the normal Intellectual Property Rights and TRIPS provisions do not accept any sharing of benefits for holders of knowledge in public domain, and since even the CBD makes no mention of sharing of benefits pertaining to knowledge in such classical texts, we might find it difficult to sustain for such knowledge claims in terms of benefit sharing as specified in the Act. We can, of course, use such information as evidence of prior art, as was done successfully in the case of the US patent on use of turmeric lotion. Furthermore, India cannot really lay exclusive claims to knowledge contained in Ayurveda; Sri Lanka and Nepal, for instance, have ancient and still vibrant traditions of Ayurveda, and India needs to arrive at co-operative arrangements with such countries in this context as well. Nevertheless, these difficulties will primarily arise in the case of products by foreign companies manufactured and marketed abroad. It is certainly possible to enforce the provisions of the Act on products being marketed in India, by both Indian and foreign companies, even if manufactured outside of India. It is therefore a reasonable step to stake very broad claims to take advantage, to the extent possible, of whatever provisions are eventually worked out at the international level. Despite the dangers of distortions and difficulties of implementation, this is undoubtedly an Act for the new millennium, for the age of biotechnology and information technology, and deserves to be welcomed, and pursued with vigour by the scientific community.

In order to implement the provisions of this Act, a biodiversity information system of unparalleled size and complexity needs to be set up. This Biodiversity Information System will have to compile information on a variety of issues, namely: (i) Status of the country's ecological habitats, and the natural as well as anthropogenic processes impacting the habitats. (ii) Current status of populations of a whole range of biodiversity elements, focusing on the more notable useful and harmful species and varieties, and the impact of natural processes, as well as human harvests, culturing, control and other practices. (iii) Regimes of legal as well as customary property rights, access rights, and conservation practices as they affect biodiversity. (iv) Harvest, transport, trade, and markets in biodiversity. (v) Processing of biodiversity resources to generate value added products. (vi) Demand for and consumption of biodiversity resources and their products. (vii) Existing technologies and new innovations pertinent to biodiversity, both at grass-roots, and in the more sophisticated industrial sector. (viii) Intellectual property rights, customary as well as through the legal regime, over biodiversity resources.

Such a Biodiversity Information System will have to feed into development planning at all levels, from Panchayats, through districts, states and the country as a whole. Given the increasing role of Panchayati Raj institutions, and others like Village Forest Committees and Pani Panchayats (local water management bodies) in natural resource management, the biodiversity information system will have to support such decentralized institutions of governance come up with natural resource management plans tailored to their own locality specific and society specific contexts. The biodiversity information system will have to help promote sustainable use and economic activities such as local level value addition, as well as serve more sophisticated biotechnology based enterprises. It should help direct proper flows of benefits of commercial uses of biodiversity to holders of traditional know-

ledge, as well as to grass-roots innovators. It will also be relevant to actualizing the provisions pertaining to farmers' rights in the Protection of Plant Varieties and Farmers' Rights Act of 2001.

This poses many challenges. These will include inventorying of elements of biodiversity with hundreds of thousands of entities; species, genes, ecosystems, all exhibiting tremendous variation in space and time. Given the existing paucity of information this would require putting in place a system that will draw on much relevant information on present status, on-going processes, and historical trends that rests with the country's barefoot ecologists, often illiterate, and is largely embodied in oral traditions. Many uses of biodiversity that will need to be documented are also in the informal sector, and are often unrecorded. Much of this informal body of information is largely derived through a trial and error process, and is a mixture of empirically valid knowledge commingled with beliefs that may not stand scrutiny. For instance, a large number of herbs are claimed to contain antidotes against snake venom; it is likely that many of these only help through providing a psychological boost to victims of snake bite. All this information, therefore, needs to be carefully assembled and validated. While organizing this information, we will need to keep in view intellectual property rights concerns and guard the interests of all segments of our population, of the tribals, of the dispensers of herbal medicines, as well as those of modern enterprises such as pharmaceutical industry.

This is a stupendous task. Its execution will not only require cross-disciplinary scientific activities, but more importantly the conduct of a cross-cultural dialogue amongst scientists, scholars in the classical tradition such as Aurvedic or Yunani practitioners, and holders of folk traditions and knowledge. This is a tremendous opportunity for the scientific community to evolve a new, people oriented approach to doing science and managing information. One of our major national failures over the fifty-five years of independence has been in the field of primary education. The Literacy Mission, launched by the Government in late 1980s, and pursued with such vigour by large numbers of volunteers has undoubtedly been one of the most significant achievements over these years. The challenge of working with people to document biodiversity and associated knowledge could develop into a mission that may be a worthy successor to the Literacy Mission.

References

Anonymous 2002 *Biological Diversity Act*, as passed by the Lok Sabha on 2 December 2002 and Rajya Sabha on 11 December 2002, Parliament Secretariat, Government of India. Also available on <http://ces.iisc.ernet.in/hpg/cesmg/>.

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9 January 2022

To, All Honourable Members & The Secretariat
Parliamentary Standing Committee on Science & Technology, Environment and Forests and Climate
Change
Parliament House Annexe, New Delhi 110 001

Subject: Comments on the Wild Life (Protection) Amendment Bill, 2021 (Bill No 159 of 2021 as introduced in the Rajya Sabha) to amend the Wild Life (Protection) Act of 1972

Dear Sir or Madam,

This is to bring to your attention our specific comments and concerns on the Wild Life (Protection) Amendment Bill, 2021 (hereafter referred to as the Amendment) tabled before the Rajya Sabha recently to amend the Wild Life (Protection) Act 1972 (hereafter referred to as the WP Act). Our comments are organised under the following broad sections: **A. General Concerns and Major Comments, B. Specific suggestions on each Amendment Clause, C. Existing Sections that require amendment, and D. Suggested Modifications to Schedules - rectification of errors, proposed additions.**

Our organization, **Nature Conservation Foundation (NCF)**, has been working in the field of wildlife research and conservation across India since 1996. As a national organization involved in scientific research, on-ground conservation, and policy support, we have also served as a member on the National Board for Wildlife (2010 – 13) and engaged with State and Central Governments, local communities, and other scientific research institutions in carrying out our work. NCF is recognized as a scientific research institution and as a centre for doctoral research by Manipal Academy of Higher Education, and our significant track record of research and technical projects and publications is available on our website, www.ncf-india.org.

We urge your careful and immediate attention on the substantive concerns and aspects raised in this letter. We are also happy to depose before the committee, if required.
Thank you for your consideration.

Yours sincerely

TR Shankar Raman, Mayuresh Gangal, Aparajita Datta,

Praveen Jayadevan, P. Jeganathan, Ashwin Viswanathan

On behalf of the Students and Scientists of the Nature Conservation Foundation, Mysore.

A. General Concerns and Major Comments

1. Inclusion of invasive alien species in Wildlife Protection Act

Amendment Clause 39 (page 12), Section 62A introduces a new section in the Act related to the inclusion of invasive alien species. This is a welcome addition as invasive alien species are widely recognised as a significant threat to wildlife and habitats in many parts of India, but there is no existing policy or regulation to address the issue. However, these are the following major concerns related to this amendment:

- (a) As per Amendment Clause 3 (Section 16A), the definition of invasive alien species to be adopted is: *"invasive alien species" means a species of animal or plant which is not native to India and whose introduction or spread may threaten or adversely impact wild life or its habitat.* This definition is not aligned with internationally accepted definitions such as that of the IUCN or the Convention of Biological Diversity. Specifically, invasive alien species may not be just restricted to those from outside India, but may include species that are native to a particular region or ecosystem of India, which when introduced into other regions can become invasive and thus can also be a concern (e.g., Himalayan cherry *Prunus cerasoides* in Western Ghats, chital *Axis axis* in Andamans). The CBD defines **Alien Species** as *A species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce* and **Invasive Alien Species** as *An alien species whose introduction and/or spread threaten biological diversity* (Source: <https://www.cbd.int/invasive/terms.shtml>).
- (b) Under the proposed amendment, it is unclear as to what process will be followed in how species will be listed and whether both plants and animals will be included. **There needs to be a well-considered scientific and transparent process for proposing, evaluating, listing, and delisting invasive alien species, along with enabling provisions directing the formulation of specific management measures.**
- (c) Finally, a thorough listing of invasive species is needed based on a comprehensive definition. Comprehensive recent assessments of alien species of India and identification of invasive aliens are available, which can be referred to as reliable resources and need to be used as the scientific basis for notification of invasive aliens. Two key resources include the following:
 - (i) Vidushi Pant, Chinmay Patwardhan, Kshitij Patil, Amiya Ranjan Bhowmick, Abhishek Mukherjee, Achyut Kumar Banerjee. **ILORA: A database of alien vascular flora of India.** *Ecological Solutions and Evidence*, First published: 21 October 2021, <https://doi.org/10.1002/2688-8319.12105>
 - (ii) Sankaran K V, Khuroo A A, Raghavan R, Molur S, Kumar B, Wong L J, Pagad S (2021). **Global Register of Introduced and Invasive Species - India.** Version 1.5. Invasive Species Specialist Group ISSG. Checklist dataset <https://doi.org/10.15468/uvnf8m> accessed via GBIF.org on 2022-01-09.

2. Notification of species as Vermin under the WP Act

Amendment Clause 3 applicable to Section 3 (i), wherein species are not declared as Vermin under Schedule V as earlier, but only as notified under Section 62 for any area and for such period as specified, is welcome. We note that there was no scientific basis or rationale for notifying species or entire groups (such as fruit bats) as Vermin under Schedule V in the existing WP Act. There are however some significant concerns related to Vermin in the WP Act:

- (a) We suggest that the word Vermin itself be dropped from the WP Act due to its derogatory and negative connotations. A more neutral phrasing or single word/term that captures the status of these kinds of species can be used instead: such as Animal Damage Control (ADC) Species. This phrasing or term may be defined under Definitions and replace the mention of Vermin in relevant sections of the Act, particularly Section 62.

- (b) The Amendment and the existing WP Act does not specify the rationale or scientific basis for listing (or delisting) species under this provision. These kinds of species could be defined as *very abundant or common animal species which are identified on the basis of scientific assessments as causing significant damage to human lives, crops, or property including livestock, through disease, injuries or loss of life, or damage to property*. As in the case of invasive alien species, **there needs to be a well-considered scientific and transparent process for proposing, evaluating, listing, and delisting species. Section 62 should include additional enabling provisions directing the formulation of specified or permitted management measures for such species, and not merely direct lethal control.**
- (c) Although this change is just a result of the proposed rationalisation of Schedules, **it is highly problematic that many animal species, including those listed in Schedule II, can potentially be notified as Vermin under the new amendment.** Given that there is no specification of criteria based on which species may be notified as Vermin, this amendment may lead to negative consequences on such species.
- (d) **We propose the terminology of Animal Damage Control as it brings focus on the need to control potential damage caused by the species through specified or permitted management measures, as in clause (b) above, rather than merely remove protections and expose species listed as Vermin to lethal control, trade and transport, capture, use as meat etc. under various sections of the WP Act (e.g., Sections 9, 44, 48A, 29 etc).** Even if a species is listed under Section 62 as Vermin or ADC species, there is no reason why it should also be automatically exposed to trade, use as meat, captivity etc. with no protections. This indicates that all sections of the WP Act related to Vermin need a careful re-appraisal.

3. The rationalisation of Schedules and revision of names in Schedules

Amendment of the Schedules under Amendment Clause 41 (page 13) to rationalise the schedules and use updated taxonomy is welcome. The Schedules have been reduced from six to three along with the inclusion of a new Schedule IV for the regulation of trade for species that are listed under CITES. The gaps and errors in the Schedules in the WP Act earlier were a matter of concern and therefore amendment to update the Schedules is welcome and much needed. However, **even with the proposed amendments, there are several gaps, errors, and exclusions in the new Schedules. We have pointed out these gaps and errors below and in Sections D. There is also a lack of clarity on the criteria or basis for inclusion of species in these Schedules and the reasons for exclusion of many species and entire groups. As this is a highly significant and critical part of the Act, this revision of Schedules requires wide public consultation, preferably under the aegis of a sub-committee of the NBWL constituted as per Sec 5B (3) of the Act. We strongly urge that the final Schedules be adopted only after this comprehensive consultative process is undertaken and completed within a fixed time frame of 6 months to a year.**

Other major concerns related to the Schedules include the following:

- a. **The rationale on which the Schedules are based should be made explicit and a transparent, scientifically rigorous, and consultative process of listing and delisting species in Schedules should be evolved.**
 - i. While there has been some welcome changes and additions in the listing given in Schedules, **the basic criteria for inclusion of a species to be listed is not provided.** For instance, the US Endangered Species Act of 1973 specifies the following criteria to determine if a species should be listed as threatened or endangered under the act: (A) *the present or threatened destruction, modification, or curtailment of its habitat or range;* (B) *overutilization for commercial, recreational, scientific, or educational purposes;* (C) *disease or predation;* (D) *the inadequacy of existing regulatory mechanisms;* or (E) *other natural or manmade factors affecting its continued existence.*

- ii. There are national assessments for some taxonomic groups (CAMP assessments, India Red Data Lists etc.) that could be used to justify inclusion in either of the two Schedules, or in the absence of our own system of assessment, there are other global assessments (e.g., *IUCN Red List of Threatened Species*) that could be used to assess status and place species in appropriate Schedules. **As detailed below, large numbers of species and entire faunal groups are missing in Schedule I or II, including some species that are Critically Endangered or of high conservation concern**, and it is unclear on what basis this was done.
- iii. **There is a need to evolve a transparent, scientifically rigorous, and consultative process of listing and delisting species in Schedules.** Models from other countries such as the US Endangered Species Act (ESA) can be examined and adopted with suitable modifications. The ESA allows petitions, including from citizens, scientific institutions, and government authorities, for listing species, followed by a rigorous review and appraisal process (<https://www.fws.gov/endangered/what-we-do/listing-petition-process.html>).
- iv. Within each of the faunal groups in Schedule I and II, **it would be better to arrange species in taxonomic order systematically based on Family**, rather than a general listing.

b. Many species / species groups are missing from the Schedules

- i. **Apart from mammals, most other faunal groups are incompletely listed, especially amphibians and reptiles. In addition, the basis or criteria for inclusion/exclusion is not clear. In Schedule I, only 1 amphibian and 43 species of reptiles are included. While in Schedule II, only 5 amphibians and 12 reptiles are listed.** There are many remarkable discoveries of new species, range extensions, re-discoveries of herpetofauna and more extensive documentation of herpetofauna in the last decade that are available in the public domain and the knowledge and expertise among different experts/institutions as well as public databases should be used to include relevant herpetofaunal species.
- ii. **Even among mammals, certain groups like bats and arboreal and terrestrial forest rodents are incompletely listed.** Contrary to popular perception, ‘rats’ (rodents) are a diverse group and include many species that are endemic or threatened/rare. Recent research and surveys have also enhanced our understanding of bat diversity and their distribution. This knowledge needs to reflect in the Schedules I and II.
- iii. **For birds, 446 species of birds known to occur in India are missing from either of the Schedules.** These bird species need to be added to one of the Schedules as it otherwise exposes a large fraction of India’s birds to a situation with no protection from hunting or other threats. The *State of India’s Birds 2020* Report (SoIB 2020, available at <https://www.stateofindiabirds.in/>) can be used as a scientific basis to identify which species needs to be listed in Schedule I or II, along with other resources such as the *IUCN Red List of Threatened Species*.
- iv. **In Schedule I, under invertebrates, only five groups are partially included, namely insects - only 63 butterflies, molluscs (10), corals (388), crabs (3), and sea cucumbers (32) in Schedule I. No other invertebrates are listed in the Schedules at all.** This is a big omission, given the huge diversity and importance of these species and groups and existing knowledge and expertise that exists in the country as well as some national/regional or global assessments.
- v. **In Schedule II (Part E), under insects, only 57 species of butterflies and 1 species of dragonfly are included. Among other invertebrates, only 14 molluscs and 10 sponges are included.** There is much knowledge now on several invertebrate groups from across the country, especially on butterflies, moths, spiders, odonates and some other groups that needs to be used to identify species from these groups for inclusion in these Schedules.
- vi. **There are only 18 plant species listed under Schedule III and the basis is unclear and arbitrary.** In the previous Act in which plants were under Schedule VI, only 6 plants were listed. The basis and criteria for only these plant species being included is not clear and

appears arbitrary. There are many other plant species that are threatened (categorized under *IUCN Red List* as Critically Endangered, Endangered, Vulnerable and Near Threatened) that need to be included. The Botanical Survey of India's list of threatened plants of India should be consulted to include more species, as well as through consultation with botanical experts in the country and by consulting the *IUCN Red List* and sources such as Kameswara Rao, C.; Geetha, B.L.; Suresh, Geetha (2003). [*Red list of threatened vascular plant species in India*](#). Ministry of Environment and Forests. While many plant species have not been assessed globally, expert knowledge can be used to determine which species needs inclusion. The listing of plant species in Schedule III should also include Bryophytes, Pteridophytes, Gymnosperms and Angiosperms and be arranged systematically family-wise within each of these larger main plant groups.

- vii. Some groups like algae, lichen and fungi are missing entirely and consultation is needed with experts on these groups to determine species that need to be included.
- viii. Please find the detailed list of species for which we suggest modification of the Schedules in the section "Schedule Modification" in Section D of this submission.

4. Recognition of Forest Rights Act (FRA) 2006 and regulation of tourist lodges

Amendment Clause 13 applicable to Section 33 of the Act includes wording on preparation of management plan as per Central Government guidelines and "*...in case the sanctuary also falls under the Scheduled Areas or areas where the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is applicable, in accordance with the management plan for such sanctuary prepared after due consultation with the Gram Sabha concerned*". This is a welcome recognition that the forest authorities would be required to manage wildlife sanctuaries in consultation with the Gram Sabha in such areas. It now incorporates that management should be as per management plan prepared as per central guidelines, or in areas under FRA, with involvement of Gram Sabha. Clause b of the same Amendment Clause 13 also will prevent Chief Wildlife Warden from allowing all tourist lodges, including Government lodges for tourism/commercial purposes to be built without NBWL clearance.

5. Renewal of firearm licences in and around Protected Areas

Amendment Clause 14 (page 4), Section 34 brings a new provision regarding renewal of firearms licences to any person residing within 10 km of a wildlife sanctuary. This is a welcome addition to the existing provisions which only covered issue of new licences to such persons. However, we note that this may lead to conflicts or practical problems in implementation in certain regions such as North-east India where people can bear arms subject to permits and renewals. In such states, there may be a need to align existing local laws/practices with this change in the WP Act.

6. WLPA should recognise State Fisheries Department regulations

Most of the freshwater and marine fish species and invertebrates in the Indian waters are managed and governed by State-level Inland Fisheries Acts, state level Marine Fisheries Regulation Acts (MFRAs) and National Marine Fisheries Acts. These acts recognise amendments under the Wildlife Protection Act. We suggest that there is a need for a separate amendment in the Wildlife Protection Act which explicitly recognises regulatory and management provisions amended under State-level Inland Fisheries Acts, State level Marine Fisheries Regulation Acts (MFRAs) and National Marine Fisheries Acts.

7. No direct protection for habitats

We note that although the term Habitats is defined under the WP Act, the main approach to wildlife protection is through (a) creation of Protected Areas, and (b) listing of protected species in Schedules. India has a number of habitats, including non-forest habitats such as grasslands, semi-desert, unique wetlands, and Himalayan high altitude ecosystems, that remain outside the Protected Area network which covers only 5% of the land area. These habitats are vital for conservation of species such as the Critically Endangered Great Indian Bustard and Lesser Florican, which cannot be protected merely by listing in Schedules. Animal corridors between Protected Areas are another category of habitat that require better recognition and protection. As these areas are often in private ownership or under agriculture or other land uses, provisions to protect habitat need to involve and incentivize local communities, landowners, and other stakeholders for their protection. **A better/wider framework for protection of habitats that are important for wildlife is required but currently missing from the Act.**

8. Rendering State Boards for Wildlife defunct

A new Amendment Clause 6 seeks to insert a new section 6A allowing the State Board for Wild Life to constitute a Standing Committee to exercise such powers and perform such duties as may be delegated to it by the Board. It provides for the membership of such a Standing Committee to be the Vice-Chairperson, the Member-Secretary, and not more than ten members, to be nominated by the Vice-Chairperson, from amongst the members of the Board. It further provides for such a Standing Committee to constitute committees, sub-committees or study groups as may be necessary.

The State Boards of Wildlife (SBWL) would be rendered defunct due to the amendment suggested for creation of the Standing Committee in the states. This has already happened with the National Board for Wildlife (NBWL). This is not desirable as this will dilute the scrutiny, evaluation and assessment that proposed projects are given. There should also be a stipulation that the main SBWL and NBWL should meet at least twice a year.

9. Allowing commercial trade in live elephants

Earlier, the transfer, acquisition and receiving of a live captive elephant was permitted under a legal provision only with prior approval by the CWLW. However, no commercial transactions were allowed. A new amendment in Section 43, now makes an exception stating that the prohibition on transfer/transport of live captive elephants does not apply to any person having a certificate of ownership and/or having permission from the State Government. This exception thus effectively allows for the commercial sale and purchase of live elephants, which is a serious undesirable amendment to the Act that will have negative consequences for captive and wild elephant populations.

B. Specific suggestions on each Amendment Clause

1/7

Amendment Clause: 2	
Section (sub-section): Preamble	
Proposed text of amendment	In the principal Act for the words "protection of wild animals, birds and plants", the words "conservation, protection and management of wildlife" shall be substituted.
Suggested modifications	In the principal Act for the words "protection of wild animals, birds and plants", the words "conservation, protection, research and management of wildlife and habitats " shall be substituted.
Rationale	It is crucial to include research in the Preamble as sound management and conservation cannot be carried out without scientific basis and must be based on scientific research and monitoring. It is also essential to include wildlife habitats within the scope of the Act, as Habitat is already defined in the Act.

2/7

Amendment Clause: 3 (e)	
Section (sub-section): 2 (19)	

Proposed text of amendment	in Clause (19), for the words and figures "Schedules I to V and VI", the words and figures "Schedules I, II and III" shall be substituted;
Suggested modifications	in Clause (19), for the words and figures "Schedules I to V and VI", the words and figures "Schedules I, II, III and IV " shall be substituted;
Rationale	We think the definition of “manufacturer” should also apply to species coming under CITES provisions (new Schedule IV) and not just to Schedule I to III species as referred in Section 44 and 49.

3/7

Amendment Clause: 3 (i)	
Section (sub-section): 2 (34)	
Proposed text of amendment	"vermin" means any wild animal notified under Section 62
Suggested modifications	"Animal Damage Control (ADC) species" or "Notified / Managed species" means any wild animal notified under Section 62;
Rationale	We suggest the word Vermin itself should be dropped from the act due to its derogatory and negative connotation. Recent research on human-wildlife conflict and coexistence on so-called ‘problem’ species indicates that reduction of conflicts requires management measures related to the location rather than merely directed at lethal population control of the species (e.g., predator proof corrals, early warning systems). We propose the term Animal Damage Control (ADC) species or, alternatively, some other neutral term like Notified or Managed species be used in the WP Act. This term should also be clearly linked to a framework to specify and notify allowed management measures for such species (which need not merely be lethal control). See Section A-2 of this submission for further details.

4/7

Amendment Clause: 5	
Section (sub-section): 5B (3)	
Proposed text of amendment	In section 5B of the principal Act, in sub-section (3), for the words "in proper discharge of functions assigned to it", the words "on such terms and conditions as may be prescribed for proper discharge of functions assigned to it under the Act" shall be substituted
Suggested modifications	
Rationale	We suggest that this amendment should not be made as it takes away agency from the study group or sub-committee of such species. See Section A-2 of this submission for further details.

5/7

Amendment Clause: 11	

Section (sub-section): 28 (1)	
Proposed text of amendment	In Section 28 of the principal Act, in sub-section (1), in clause (b), after the word "photography", the words "and film-making without making any change in the habitat or causing any adverse impact to the habitat of wildlife" shall be inserted.
Suggested modifications	Although the amendment is concerned only with photography and film-making, we would like to point out the need for more enabling provision related to research as well. We therefore suggest that the provision for issue of permit under Section 28 of the principal act, in sub-section (1) (c) be revised suitably. We specifically suggest that permission for research be dealt with as a separate clause with the stipulation that permits shall be issued in a timely manner within 3 months from the date of application and reasons for any denial of permit are recorded in writing after giving an opportunity for the applicant to be heard or to submit a revised proposal.
Rationale	As research is a key requirement for conservation and management of wildlife, a more enabling provision for research is required in the WP Act. It should not be equated and treated on the same basis as tourism and photography. As long as research is conducted within legal bounds respecting laws of the land, retaining discretionary power the Chief Wildlife Warden in terms of what research should be permitted in the protected area may be arbitrary and could be biased. Given that much ecological research is seasonally sensitive and time-bound, delay in the permit granting process can have a serious effect on the ability to conduct research in the first place. Although the Environment Ministry has issued Guidelines for Scientific Research in the Wildlife Protected Areas this is not reflected in the main Act through enabling provisions.

6/7

Amendment Clause: 12	
Section (sub-section): 29	
Proposed text of amendment	for the Explanation, the following Explanation shall be substituted, namely:— "Explanation.—For the purposes of this section, grazing or movement of livestock permitted under clause (d) of section 33, or hunting of wild animals under a permit granted under section 11 or hunting without violating the conditions of a permit granted under section 12, or the exercise of any rights permitted to continue under clause (c) of sub-section (2) of section 24, or the bona fide use of drinking and household water by local communities, shall not be deemed to be an act prohibited under this section."
Suggested modifications	(b) for the Explanation, the following Explanation shall be substituted, namely:— "Explanation.—For the purposes of this section, grazing or movement of livestock permitted under clause (d) of section 33, or hunting of wild animals under a permit granted under section 11 or hunting without violating the conditions of a permit granted under section 12, or the exercise of any rights permitted to continue under clause (c) of sub-section (2) of section 24, or the bona fide use of drinking and household water by local communities,

	subsistence fishing or any other rights provided under The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 , shall not be deemed to be an act prohibited under this section."
Rationale	Given that The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) seeks to correct omissions in recognition of rights during the process of PA notification, which has been a rather common occurrence, it only stands to reason that any rights lawfully recognised under the FRA must be honoured under the WLPA.

7/7

Amendment Clause: 16 (a)	
Section (sub-section): 36D (2)	
Proposed text of amendment	for the words "five representatives", the words "not less than five representatives" shall be substituted
Suggested modifications	for the words "five representatives", the words "not less than five representatives including at least one representative of a local wildlife organisation or Chairperson of the local Biodiversity Management Committee constituted under the Biological Diversity Act (2002) " shall be substituted
Rationale	The amendment recognises the need to constitute a committee of local members but fails to stipulate that the committee should include any member with experience on wildlife and biodiversity of the areas. Hence the suggestion.

C. Existing Sections that require amendment

Section (sub-section)	Existing text in WP Act	Suggested modifications	Rationale
Chapter 1, point no. 2 Definitions	The Act defines an animal - only as amphibians, birds, mammals, or reptiles and their young and in the case of birds and reptiles, also their eggs.	It should define an animal - as species that are invertebrates, amphibians, reptiles, birds and mammals and their young and their eggs, in the case of oviparous species.	This is an incorrect biological definition as it completely excludes all invertebrates. It also assumes that all amphibians are not egg-laying, which is not true.
Chapter 3, Sec 12; Grant of permit for special purposes	..which shall entitle the holder of such permit to hunt subject to such conditions as may be specified therein, any wild animal specified in such permit for the purpose of a) education, b) scientific research, bb) scientific management..	The word hunt should be replaced with catch or capture with appropriate, accepted and ethical methods	It is inappropriate and incorrect to use the word hunt with respect to catching/capture and handling of animals for education, research and scientific management. We therefore suggest that appropriate terminology such as capture and handling of animals is defined under the Act and

			the Section 12 suitably modified.
39 (3)	Any such animal article, trophy or uncured trophy or meat derived from any wild animal, as referred to in sub-sections (1) and (2) may be disposed of by the State Government or the Central Government, as the case may be, in such manner as may be prescribed by the Central Government	Any such animal article, trophy or uncured trophy or meat derived from any wild animal, as referred to in sub-sections (1) and (2) may be disposed of by the State Government or the Central Government, as the case may be, in such manner as may be prescribed under guidelines or protocols by the Central Government	We suggest that proper guidelines and protocols need to be issued for the various cases and situations as different animal articles may require different protocols. In our opinion Section 39 (3) should be re-amended making provisions for setting up such guidelines or protocols and not just through mere notification or orders that may be prescribed from time to time.
62	the words and figure "and so long as such notification is in force, such wild animals shall be deemed to have been included in Schedule V" shall be omitted.		We strongly suggest that designation of species as Vermin should happen with explicit stipulation of reasons, basing it on scientific evidence by involvement of an advisory or supervisory scientific body. Also there should be provision of periodic tracking of the fate of animal's population as a result of such notification. Considering the requirements of such processes we recommend that this section should be re-amended. We also provide further comments in Section A-2 of this submission.

D. Suggested modifications to Schedules (rectification of errors, proposed additions etc.)

1. General comments

- Due to some formatting errors, many species' scientific names (Latin binomials) are not separated by a space between the genus name and species epithet, which can lead to confusion. It also looks shoddy in a document that is so important.
- About **446** bird species known to occur in India (<https://www.indianbirds.in/india/>) are not listed in any of the Schedules. In addition, the Schedules are not designed to incorporate new discoveries and new range extensions, we thus recommend that all birds that are seen in the wild (excluding alien species) within the political boundaries of India fall under Schedule II, unless they fall under

Schedule I or have been explicitly declared as Vermin (or Animal Damage Control species as proposed in this submission).

- c. Any species that is listed by IUCN as "Critically Endangered", or "Endangered" and "Vulnerable" category should by default be included in Schedule I.

2. Suggested changed in Schedules for animals (except birds)

Current Schedule	Part	Comments
Schedule I	Part A - Mammals	Following mammal species should be listed in Schedule I 1. Leaf deer <u><i>Muntiacus putaoensis</i></u> , 2. Gongshan muntjac <u><i>Muntiacus gongshanensis</i></u> 3. Arunachal Macaque <u><i>Macaca munzala</i></u> 4. White-cheeked macaque <u><i>Macaca leucogenys</i></u> 5. Mechuka Giant Flying Squirrel <u><i>Petaturista mechukaensis</i></u> 6. Mishmi Giant Flying Squirrel <u><i>Petaturista mishmiensis</i></u>
Schedule I	Part H - Corals	As many scientific names are incorrect and taxonomic nomenclature keeps on changing, we recommend that part H of Schedule I just mentions "all corals" without specifying family names
Schedule I	Part J - Holothurians	- Most of the Holothurians are endangered because of the export demand - Holothurians are fast growing and quick maturing and sustainable harvest models of Holothurians exist in other parts of the world - In Schedule IV, in appendix II only three holothurians are mentioned and many species which are commonly found in India do not have any mention in appendix II Considering these points, we recommend that MoEFCC should make an active effort in listing all the Indian Holothurians in CITES appendices. Once that is achieved Holothurians can be shifted to Schedule IV. Until that time all the Holothurians may be listed in Schedule II.
Schedule I, Part D		A single species of amphibian (Himalayan Salamander) is included in Schedule I. This is completely insufficient. It excludes entire Anura and Gymnophiona (caecilians). At the very least, Indian CAMP assessments or IUCN Red List should be used to identify species requiring protection.
Schedule II	Mammals	Javan Mongoose - This species is not reported in India and needs to be removed.

2. Birds: Suggested changes in the Schedules

There is no apparent rationale for listing various birds in Schedule I or Schedule II. In addition, among the birds which were reported from India, around 446 birds are missing in either of the Schedules. Fortunately, there is ample reliable information available about Indian birds in the form of the global IUCN Red List and criteria used there and the "Status of Conservation Concern" criteria put together in the 'The State of India's Birds' report which was published in 2020 (<https://www.stateofindiabirds.in/>).

Based on these criteria, we have suggested following changes in the listing/ classification of birds in the new amendment. We would like to emphasize here that just like we have suggested for birds, similar knowledge-

based status assessments are possible for the other taxa and we strongly recommend that the committee uses available scientific knowledge/expertise and information in listing/classification of all the taxa in different schedules in a more systematic and comprehensive manner which provides a strong and clear basis for inclusion or exclusion in any of the Schedules.

a. Bird species additions required in Schedule I

Some of the bird species which show a high conservation priority, according to the State of India's Birds report or which are classified as Critically Endangered, Endangered or Vulnerable categories by IUCN are either missing from Schedule II or not listed at all in the new amendments. Many species of conservation concern were identified by the *State of India's Birds 2020* report. Therefore, based on these criteria, we propose the following species should be added in Schedule I.

Sr. No.	English name	Scientific name	Current classification (as per proposed amendments)	IUCN Category	Status of Conservation Concern (SolB)
1	Baer's Pochard	<i>Aythya baeri</i>	Schedule II	Critically Endangered	NA
2	White-headed Duck	<i>Oxyura leucocephala</i>	Schedule II	Endangered	NA
3	Manipur Bush Quail	<i>Perdica manipurensis</i>	Schedule II	Endangered	High
4	Masked Finfoot	<i>Heliopais personatus</i>	Not listed	Endangered	NA
5	Sociable Lapwing	<i>Vanellus gregarius</i>	Schedule II	Critically Endangered	High
6	Great Knot	<i>Calidris tenuirostris</i>	Schedule II	Endangered	High
7	Spoon-billed Sandpiper	<i>Calidris pygmaea</i>	Schedule II	Critically Endangered	NA
8	Black-bellied Tern	<i>Sterna acuticauda</i>	Schedule II	Endangered	High
9	Indian Skimmer	<i>Rynchops albicollis</i>	Schedule II	Endangered	High
10	Greater Adjutant	<i>Leptoptilos dubius</i>	Schedule II	Endangered	High
11	Christmas Island Frigatebird	<i>Fregata andrewsi</i>	Not listed	Critically Endangered	NA
12	White-eared Night Heron	<i>Gorsachius magnificus</i>	Not listed	Endangered	NA
13	Swamp Grass Babbler	<i>Laticilla cinerascens</i>	Not listed	Endangered	High
14	Banasura Laughingthrush	<i>Montecincla jerdoni</i>	Not listed	Endangered	High
15	Nilgiri Laughingthrush	<i>Montecincla cachinnans</i>	Not listed	Endangered	High
16	Nilgiri Sholakili	<i>Sholicola major</i>	Schedule II	Endangered	High
17	Finn's Weaver	<i>Ploceus megarhynchus</i>	Schedule II	Endangered	High
18	Yellow-breasted Bunting	<i>Emberiza aureola</i>	Schedule II	Critically Endangered	High

19	Marbled Teal	<i>Marmaronetta angustirostris</i>	Schedule II	Vulnerable	NA
20	Swamp Francolin	<i>Francolinus gularis</i>	Schedule II	Vulnerable	High
21	Yellow-eyed Pigeon	<i>Columba eversmanni</i>	Schedule II	Vulnerable	High
22	Pale-capped Pigeon	<i>Columba punicea</i>	Schedule II	Vulnerable	High
23	Dark-rumped Swift	<i>Apus acuticauda</i>	Not listed	Vulnerable	High
24	Wood Snipe	<i>Gallinago nemoricola</i>	Schedule II	Vulnerable	NA
25	Great Slaty Woodpecker	<i>Mulleripicus pulverulentus</i>	Not listed	Vulnerable	High
26	Grey-crowned Prinia	<i>Prinia cinereocapilla</i>	Not listed	Vulnerable	High
27	Black-breasted Parrotbill	<i>Paradoxornis flavirostris</i>	Not listed	Vulnerable	High
28	Mishmi Wren Babbler	<i>Spelaeornis badeigularis</i>	Schedule II	Vulnerable	High
29	Naga Wren Babbler	<i>Spelaeornis chocolatinus</i>	Schedule II	Vulnerable	High
30	Marsh Babbler	<i>Pellorneum palustre</i>	Not listed	Vulnerable	High
31	Slender-billed Babbler	<i>Argya longirostris</i>	Not listed	Vulnerable	High
32	Ashambu Laughingthrush	<i>Montecincla meridionalis</i>	Not listed	Vulnerable	High
33	Beautiful Nuthatch	<i>Sitta formosa</i>	Not listed	Vulnerable	High
34	White-bellied Sholakili	<i>Sholicola albiventris</i>	Schedule II	Vulnerable	High
35	Hodgson's Bushchat	<i>Saxicola insignis</i>	Schedule II	Vulnerable	High
36	Green Munia	<i>Amandava formosa</i>	Schedule II	Vulnerable	High
37	Nilgiri Pipit	<i>Anthus nilghiriensis</i>	Schedule II	Vulnerable	High
38	Common Pochard	<i>Aythya ferina</i>	Schedule II	Vulnerable	Moderate
39	Nilgiri Wood Pigeon	<i>Columba elphinstonii</i>	Schedule II	Vulnerable	Moderate
40	River Tern	<i>Sterna aurantia</i>	Schedule II	Vulnerable	Moderate
41	Lesser Adjutant	<i>Leptoptilos javanicus</i>	Schedule II	Vulnerable	Moderate
42	Malabar Grey Hornbill	<i>Ocyrceros griseus</i>	Not listed	Vulnerable	Moderate
43	Malabar Pied Hornbill	<i>Anthracoceros coronatus</i>	Not listed	Near Threatened	Moderate
44	Indian Courser	<i>Cursorius coromandelicus</i>	Not listed	Least Concern	Moderate
45	Rufous-vented Grass Babbler	<i>Laticilla burnesii</i>	Not listed	Near Threatened	Moderate
46	Ibisbill	<i>Ibidorhyncha struthersii</i>	Not listed	Least Concern	NA

47	Blyth's Kingfisher	<i>Alcedo hercules</i>	Not listed	Near Threatened	NA
48	Yellow-rumped Honeyguide	<i>Indicator xanthonotus</i>	Not listed	Near Threatened	Moderate
49	Indian Eagle Owl	<i>Bubo bengalensis</i>	Schedule II	Least Concern	NA
50	Spot-bellied Eagle Owl	<i>Bubo nipalensis</i>	Schedule II	Least Concern	NA
51	Eurasian Eagle Owl	<i>Bubo bubo</i>	Schedule II	Least Concern	NA
52	Brown Fish Owl	<i>Ketupa zeylonensis</i>	Schedule II	Least Concern	Low
53	Tawny Fish Owl	<i>Ketupa flavipes</i>	Schedule II	Least Concern	NA
54	Buffy Fish Owl	<i>Ketupa ketupu</i>	Schedule II	Least Concern	NA
55	Mottled Wood Owl	<i>Strix ocellata</i>	Schedule II	Least Concern	NA
56	Brown Wood Owl	<i>Strix leptogrammica</i>	Schedule II	Least Concern	NA
57	Common Barn Owl	<i>Tyto alba</i>	Schedule II	Least Concern	NA
58	Andaman Barn Owl	<i>Tyto deroepstorffi</i>	Schedule II	Least Concern	NA
59	Northern Long-eared Owl	<i>Asio otus</i>	Schedule II	Least Concern	NA
60	Short-eared Owl	<i>Asio flammeus</i>	Schedule II	Least Concern	Low

b. Bird species that need re-classifying or moving from Schedule I to Schedule II

Some species which are classified/ listed under Schedule I according to the current amendments are classified as “Least Concern” species in IUCN category and also have “Low” status of conservation concern according to the State of India’s Birds report. Thus, we suggest that these species should be moved from Schedule I to Schedule II.

Sr. No.	English name	Scientific name	IUCN category	Status of Conservation Concern (SolB)
1	Eurasian Spoonbill	<i>Platalea leucorodia</i>	Least Concern	Low
2	Crested Serpent Eagle	<i>Spilornis cheela</i>	Least Concern	Low
3	Black Eagle	<i>Ictinaetus malaiensis</i>	Least Concern	Low
4	Booted Eagle	<i>Hieraaetus pennatus</i>	Least Concern	Low
5	Bonelli's Eagle	<i>Aquila fasciata</i>	Least Concern	Low
6	Western Marsh Harrier	<i>Circus aeruginosus</i>	Least Concern	Low
7	Shikra	<i>Accipiter badius</i>	Least Concern	Low
8	Black Kite	<i>Milvus migrans</i>	Least Concern	Low
9	Brahminy Kite	<i>Haliastur indus</i>	Least Concern	Low
10	Common Buzzard	<i>Buteo buteo</i>	Least Concern	Low
11	Himalayan Buzzard	<i>Buteo refectus</i>	Least Concern	Low

12	Long-legged Buzzard	<i>Buteo rufinus</i>	Least Concern	Low
13	Grey-faced Buzzard	<i>Butastur indicus</i>	Least Concern	NA
14	Red Kite	<i>Milvus milvus</i>	Least Concern	NA

c. Bird species to be added to Schedule II

There are 446 species of birds which are reported from India, but which are not listed in either of the Schedules. We have proposed that 21 of them need to be included in Schedule I. We recommend that the remaining 425 birds should be included in Schedule II.

Sr. No.	English Name	Scientific Name
1	Japanese Quail	<i>Coturnix japonica</i>
2	Red Junglefowl	<i>Gallus gallus</i>
3	Lesser Flamingo	<i>Phoeniconaias minor</i>
4	Black-necked Grebe	<i>Podiceps nigricollis</i>
5	Nicobar Imperial Pigeon	<i>Ducula nicobarica</i>
6	Horsfield's Bronze Cuckoo	<i>Chrysococcyx basalis</i>
7	White-rumped Spinetail	<i>Zoonavena sylvatica</i>
8	White-throated Needletail	<i>Hirundapus caudacutus</i>
9	Silver-backed Needletail	<i>Hirundapus cochinchinensis</i>
10	Brown-backed Needletail	<i>Hirundapus giganteus</i>
11	Plume-toed Swiftlet	<i>Collocalia affinis</i>
12	Himalayan Swiftlet	<i>Aerodramus brevirostris</i>
13	Alpine Swift	<i>Tachymarptis melba</i>
14	Common Swift	<i>Apus apus</i>
15	Pacific Swift	<i>Apus pacificus</i>
16	Blyth's Swift	<i>Apus leuconyx</i>
17	Indian House Swift	<i>Apus affinis</i>
18	Nepal House Swift	<i>Apus nipalensis</i>
19	Asian Palm Swift	<i>Cypsiurus balasiensis</i>
20	Crested Treeswift	<i>Hemiprocne coronata</i>
21	American Golden Plover	<i>Pluvialis dominica</i>
22	Greater Painted-snipe	<i>Rostratula benghalensis</i>
23	Crab-plover	<i>Dromas ardeola</i>

24	Cream-coloured Courser	<i>Cursorius cursor</i>
25	Collared Pratincole	<i>Glareola pratincola</i>
26	Oriental Pratincole	<i>Glareola maldivarum</i>
27	Small Pratincole	<i>Glareola lactea</i>
28	South Polar Skua	<i>Stercorarius maccormicki</i>
29	Brown Skua	<i>Stercorarius antarcticus</i>
30	Pomarine Skua	<i>Stercorarius pomarinus</i>
31	Arctic Skua	<i>Stercorarius parasiticus</i>
32	Long-tailed Skua	<i>Stercorarius longicaudus</i>
33	White-tailed Tropicbird	<i>Phaethon lepturus</i>
34	Red-billed Tropicbird	<i>Phaethon aethereus</i>
35	Red-tailed Tropicbird	<i>Phaethon rubricauda</i>
36	Red-throated Diver	<i>Gavia stellata</i>
37	Black-throated Diver	<i>Gavia arctica</i>
38	Wilson's Storm-petrel	<i>Oceanites oceanicus</i>
39	White-faced Storm-petrel	<i>Pelagodroma marina</i>
40	Black-bellied Storm-petrel	<i>Fregetta tropica</i>
41	Swinhoe's Storm-petrel	<i>Oceanodroma monorhis</i>
42	Barau's Petrel	<i>Pterodroma baraui</i>
43	Jouanin's Petrel	<i>Bulweria fallax</i>
44	Streaked Shearwater	<i>Calonectris leucomelas</i>
45	Cory's Shearwater	<i>Calonectris borealis</i>
46	Flesh-footed Shearwater	<i>Ardenna carneipes</i>
47	Wedge-tailed Shearwater	<i>Ardenna pacifica</i>
48	Short-tailed Shearwater	<i>Ardenna tenuirostris</i>
49	Tropical Shearwater	<i>Puffinus bailloni</i>
50	Persian Shearwater	<i>Puffinus persicus</i>
51	Lesser Frigatebird	<i>Fregata ariel</i>
52	Great Frigatebird	<i>Fregata minor</i>
53	Masked Booby	<i>Sula dactylatra</i>
54	Brown Booby	<i>Sula leucogaster</i>

55	Red-footed Booby	<i>Sula sula</i>
56	Javan Pond Heron	<i>Ardeola speciosa</i>
57	Black-winged Kite	<i>Elanus caeruleus</i>
58	European Honey Buzzard	<i>Pernis apivorus</i>
59	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i>
60	Legge's Hawk Eagle	<i>Nisaetus kelaarti</i>
61	Rough-legged Buzzard	<i>Buteo lagopus</i>
62	Common Hoopoe	<i>Upupa epops</i>
63	Indian Grey Hornbill	<i>Ocyrceros birostris</i>
64	Common Kingfisher	<i>Alcedo atthis</i>
65	Blue-eared Kingfisher	<i>Alcedo meninting</i>
66	Oriental Dwarf Kingfisher	<i>Ceyx erithaca</i>
67	Brown-winged Kingfisher	<i>Pelargopsis amauroptera</i>
68	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>
69	Ruddy Kingfisher	<i>Halcyon coromanda</i>
70	White-throated Kingfisher	<i>Halcyon smyrnensis</i>
71	Black-capped Kingfisher	<i>Halcyon pileata</i>
72	Collared Kingfisher	<i>Todiramphus chloris</i>
73	Crested Kingfisher	<i>Megaceryle lugubris</i>
74	Pied Kingfisher	<i>Ceryle rudis</i>
75	Blue-bearded Bee-eater	<i>Nyctyornis athertoni</i>
76	Green Bee-eater	<i>Merops orientalis</i>
77	Blue-throated Bee-eater	<i>Merops viridis</i>
78	Blue-cheeked Bee-eater	<i>Merops persicus</i>
79	Blue-tailed Bee-eater	<i>Merops philippinus</i>
80	European Bee-eater	<i>Merops apiaster</i>
81	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>
82	Indochinese Roller	<i>Coracias affinis</i>
83	Eurasian Wryneck	<i>Jynx torquilla</i>
84	Speckled Piculet	<i>Picumnus innominatus</i>
85	White-browed Piculet	<i>Sasia ochracea</i>

86	Heart-spotted Woodpecker	<i>Hemicircus canente</i>
87	Brown-capped Pygmy Woodpecker	<i>Yungipicus nanus</i>
88	Grey-capped Pygmy Woodpecker	<i>Yungipicus canicapillus</i>
89	Yellow-crowned Woodpecker	<i>Leiopicus mahrattensis</i>
90	Brown-fronted Woodpecker	<i>Dendrocoptes auriceps</i>
91	Rufous-bellied Woodpecker	<i>Dendrocopos hyperythrus</i>
92	Fulvous-breasted Woodpecker	<i>Dendrocopos macei</i>
93	Freckle-breasted Woodpecker	<i>Dendrocopos analis</i>
94	Stripe-breasted Woodpecker	<i>Dendrocopos atratus</i>
95	Darjeeling Woodpecker	<i>Dendrocopos darjellensis</i>
96	Great Spotted Woodpecker	<i>Dendrocopos major</i>
97	Himalayan Woodpecker	<i>Dendrocopos himalayensis</i>
98	Sind Woodpecker	<i>Dendrocopos assimilis</i>
99	Crimson-breasted Woodpecker	<i>Dryobates cathpharius</i>
100	Bay Woodpecker	<i>Blythipicus pyrrhotis</i>
101	Greater Flameback	<i>Chrysocolaptes guttacristatus</i>
102	White-naped Woodpecker	<i>Chrysocolaptes festivus</i>
103	Rufous Woodpecker	<i>Micropternus brachyurus</i>
104	Pale-headed Woodpecker	<i>Gecinulus grantia</i>
105	Himalayan Flameback	<i>Dinopium shorii</i>
106	Common Flameback	<i>Dinopium javanense</i>
107	Black-rumped Flameback	<i>Dinopium benghalense</i>
108	Lesser Yellownape	<i>Picus chlorolophus</i>
109	Streak-throated Woodpecker	<i>Picus xanthopygaeus</i>
110	Scaly-bellied Woodpecker	<i>Picus squamatus</i>
111	Grey-headed Woodpecker	<i>Picus canus</i>
112	Greater Yellownape	<i>Chrysophlegma flavinucha</i>
113	White-bellied Woodpecker	<i>Dryocopus javensis</i>
114	Andaman Woodpecker	<i>Dryocopus hodgei</i>

115	Long-tailed Broadbill	<i>Psarisomus dalhousiae</i>
116	Silver-breasted Broadbill	<i>Serilophus lunatus</i>
117	Orange Minivet	<i>Pericrocotus flammeus</i>
118	Black-headed Shrike-babbler	<i>Pteruthius rufiventer</i>
119	Himalayan Shrike-babbler	<i>Pteruthius ripleyi</i>
120	Blyth's Shrike-babbler	<i>Pteruthius aeralatus</i>
121	Green Shrike-babbler	<i>Pteruthius xanthochlorus</i>
122	Black-eared Shrike-babbler	<i>Pteruthius melanotis</i>
123	Clicking Shrike-babbler	<i>Pteruthius intermedius</i>
124	White-bellied Erpornis	<i>Erpornis zantholeuca</i>
125	Mangrove Whistler	<i>Pachycephala cinerea</i>
126	Ashy Woodswallow	<i>Artamus fuscus</i>
127	White-breasted Woodswallow	<i>Artamus leucorhynchus</i>
128	Malabar Woodshrike	<i>Tephrodornis sylvicola</i>
129	Large Woodshrike	<i>Tephrodornis virgatus</i>
130	Common Woodshrike	<i>Tephrodornis pondicerianus</i>
131	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i>
132	White-throated Fantail	<i>Rhipidura albicollis</i>
133	Spot-breasted Fantail	<i>Rhipidura albogularis</i>
134	White-browed Fantail	<i>Rhipidura aureola</i>
135	Black-naped Monarch	<i>Hypothymis azurea</i>
136	Amur Paradise-flycatcher	<i>Terpsiphone incei</i>
137	Blyth's Paradise-flycatcher	<i>Terpsiphone affinis</i>
138	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>
139	Red-backed Shrike	<i>Lanius collurio</i>
140	Red-tailed Shrike	<i>Lanius phoenicuroides</i>
141	Isabelline Shrike	<i>Lanius isabellinus</i>
142	Brown Shrike	<i>Lanius cristatus</i>
143	Burmese Shrike	<i>Lanius collurioides</i>
144	Bay-backed Shrike	<i>Lanius vittatus</i>
145	Long-tailed Shrike	<i>Lanius schach</i>

146	Grey-backed Shrike	<i>Lanius tephronotus</i>
147	Great Grey Shrike	<i>Lanius excubitor</i>
148	Lesser Grey Shrike	<i>Lanius minor</i>
149	Masked Shrike	<i>Lanius nubicus</i>
150	Woodchat Shrike	<i>Lanius senator</i>
151	House Crow	<i>Corvus splendens</i>
152	Hooded Crow	<i>Corvus cornix</i>
153	Large-billed Crow	<i>Corvus macrorhynchos</i>
154	Pied Crow	<i>Corvus albus</i>
155	Yellow-bellied Fantail	<i>Chelidorhynch hypoxanthus</i>
156	Grey-headed Canary-flycatcher	<i>Culicicapa ceylonensis</i>
157	Indian Black-lored Tit	<i>Machlolophus aplonotus</i>
158	White-crowned Penduline Tit	<i>Remiz coronatus</i>
159	Common Tailorbird	<i>Orthotomus sutorius</i>
160	Dark-necked Tailorbird	<i>Orthotomus atrogularis</i>
161	Striated Prinia	<i>Prinia crinigera</i>
162	Black-throated Prinia	<i>Prinia atrogularis</i>
163	Hill Prinia	<i>Prinia superciliaris</i>
164	Rufous-fronted Prinia	<i>Prinia buehneri</i>
165	Rufescent Prinia	<i>Prinia rufescens</i>
166	Grey-breasted Prinia	<i>Prinia hodgsonii</i>
167	Graceful Prinia	<i>Prinia gracilis</i>
168	Jungle Prinia	<i>Prinia sylvatica</i>
169	Yellow-bellied Prinia	<i>Prinia flaviventris</i>
170	Ashy Prinia	<i>Prinia socialis</i>
171	Plain Prinia	<i>Prinia inornata</i>
172	Zitting Cisticola	<i>Cisticola juncidis</i>
173	Golden-headed Cisticola	<i>Cisticola exilis</i>
174	Thick-billed Warbler	<i>Arundinax aedon</i>
175	Booted Warbler	<i>Iduna caligata</i>

176	Sykes's Warbler	<i>Iduna rama</i>
177	Black-browed Reed Warbler	<i>Acrocephalus bistrigiceps</i>
178	Moustached Warbler	<i>Acrocephalus melanopogon</i>
179	Sedge Warbler	<i>Acrocephalus schoenobaenus</i>
180	Paddyfield Warbler	<i>Acrocephalus agricola</i>
181	Blunt-winged Warbler	<i>Acrocephalus concinens</i>
182	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>
183	Large-billed Reed Warbler	<i>Acrocephalus orinus</i>
184	Great Reed Warbler	<i>Acrocephalus arundinaceus</i>
185	Oriental Reed Warbler	<i>Acrocephalus orientalis</i>
186	Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i>
187	Striated Grassbird	<i>Megalurus palustris</i>
188	Rusty-rumped Warbler	<i>Helopsaltes certhiola</i>
189	Lanceolated Warbler	<i>Locustella lanceolata</i>
190	Brown Bush Warbler	<i>Locustella luteoventris</i>
191	Chinese Bush Warbler	<i>Locustella tacsanowskia</i>
192	Long-billed Bush Warbler	<i>Locustella major</i>
193	Grasshopper Warbler	<i>Locustella naevia</i>
194	Baikal Bush Warbler	<i>Locustella davidi</i>
195	West Himalayan Bush Warbler	<i>Locustella kashmirensis</i>
196	Spotted Bush Warbler	<i>Locustella thoracica</i>
197	Russet Bush Warbler	<i>Locustella mandelli</i>
198	Broad-tailed Grassbird	<i>Schoenicola platyurus</i>
199	Bristled Grassbird	<i>Schoenicola striatus</i>
200	Scaly-breasted Wren Babbler	<i>Pnoepyga albiventer</i>
201	Nepal Wren Babbler	<i>Pnoepyga immaculata</i>
202	Pygmy Wren Babbler	<i>Pnoepyga pusilla</i>
203	Grey-throated Martin	<i>Riparia chinensis</i>
204	Sand Martin	<i>Riparia riparia</i>
205	Pale Martin	<i>Riparia diluta</i>

206	Eurasian Crag Martin	<i>Ptyonoprogne rupestris</i>
207	Dusky Crag Martin	<i>Ptyonoprogne concolor</i>
208	Barn Swallow	<i>Hirundo rustica</i>
209	Wire-tailed Swallow	<i>Hirundo smithii</i>
210	Hill Swallow	<i>Hirundo domicola</i>
211	Pacific Swallow	<i>Hirundo tahitica</i>
212	Red-rumped Swallow	<i>Cecropis daurica</i>
213	Striated Swallow	<i>Cecropis striolata</i>
214	Streak-throated Swallow	<i>Petrochelidon fluvicola</i>
215	Northern House Martin	<i>Delichon urbicum</i>
216	Asian House Martin	<i>Delichon dasypus</i>
217	Nepal House Martin	<i>Delichon nipalense</i>
218	Wood Warbler	<i>Phylloscopus sibilatrix</i>
219	Ashy-throated Warbler	<i>Phylloscopus maculipennis</i>
220	Buff-barred Warbler	<i>Phylloscopus pulcher</i>
221	Yellow-browed Warbler	<i>Phylloscopus inornatus</i>
222	Hume's Warbler	<i>Phylloscopus humei</i>
223	Brooks's Leaf Warbler	<i>Phylloscopus subviridis</i>
224	Chinese Leaf Warbler	<i>Phylloscopus yunnanensis</i>
225	Lemon-rumped Warbler	<i>Phylloscopus chloronotus</i>
226	Sichuan Leaf Warbler	<i>Phylloscopus forresti</i>
227	Tytler's Leaf Warbler	<i>Phylloscopus tytleri</i>
228	Sulphur-bellied Warbler	<i>Phylloscopus griseolus</i>
229	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>
230	Dusky Warbler	<i>Phylloscopus fuscatus</i>
231	Smoky Warbler	<i>Phylloscopus fuligiventer</i>
232	Plain Leaf Warbler	<i>Phylloscopus neglectus</i>
233	Buff-throated Warbler	<i>Phylloscopus subaffinis</i>
234	Willow Warbler	<i>Phylloscopus trochilus</i>
235	Mountain Chiffchaff	<i>Phylloscopus sindianus</i>
236	Common Chiffchaff	<i>Phylloscopus collybita</i>

237	White-spectacled Warbler	<i>Phylloscopus intermedius</i>
238	Grey-cheeked Warbler	<i>Phylloscopus poliogenys</i>
239	Green-crowned Warbler	<i>Phylloscopus burkii</i>
240	Grey-crowned Warbler	<i>Phylloscopus tephrocephalus</i>
241	Whistler's Warbler	<i>Phylloscopus whistleri</i>
242	Green Warbler	<i>Phylloscopus nitidus</i>
243	Greenish Warbler	<i>Phylloscopus trochiloides</i>
244	Two-barred Warbler	<i>Phylloscopus plumbeitarsus</i>
245	Large-billed Leaf Warbler	<i>Phylloscopus magnirostris</i>
246	Sakhalin Leaf Warbler	<i>Phylloscopus borealoides</i>
247	Arctic Warbler	<i>Phylloscopus borealis</i>
248	Chestnut-crowned Warbler	<i>Phylloscopus castaniceps</i>
249	Yellow-vented Warbler	<i>Phylloscopus cantator</i>
250	Western Crowned Warbler	<i>Phylloscopus occipitalis</i>
251	Blyth's Leaf Warbler	<i>Phylloscopus reguloides</i>
252	Claudia's Leaf Warbler	<i>Phylloscopus claudiae</i>
253	Grey-hooded Warbler	<i>Phylloscopus xanthoschistos</i>
254	Pale-footed Bush Warbler	<i>Urosphena pallidipes</i>
255	Asian Stubtail	<i>Urosphena squameiceps</i>
256	Grey-bellied Tesia	<i>Tesia cyaniventer</i>
257	Slaty-bellied Tesia	<i>Tesia olivea</i>
258	Chestnut-crowned Bush Warbler	<i>Cettia major</i>
259	Grey-sided Bush Warbler	<i>Cettia brunnifrons</i>
260	Chestnut-headed Tesia	<i>Cettia castaneocoronata</i>
261	Cetti's Warbler	<i>Cettia cetti</i>
262	Yellow-bellied Warbler	<i>Abroscopus superciliaris</i>
263	Rufous-faced Warbler	<i>Abroscopus albogularis</i>
264	Black-faced Warbler	<i>Abroscopus schisticeps</i>
265	Mountain Tailorbird	<i>Phyllergates cucullatus</i>
266	Broad-billed Warbler	<i>Tickellia hodgsoni</i>
267	Manchurian Bush Warbler	<i>Horornis canturians</i>

268	Brownish-flanked Bush Warbler	<i>Horornis fortipes</i>
269	Hume's Bush Warbler	<i>Horornis brunnescens</i>
270	Aberrant Bush Warbler	<i>Horornis flavolivaceus</i>
271	White-browed Tit Warbler	<i>Leptopoecile sophiae</i>
272	Crested Tit Warbler	<i>Leptopoecile elegans</i>
273	White-cheeked Tit	<i>Aegithalos leucogenys</i>
274	Black-throated Tit	<i>Aegithalos concinnus</i>
275	White-throated Tit	<i>Aegithalos niveogularis</i>
276	Black-browed Tit	<i>Aegithalos iouschistos</i>
277	Garden Warbler	<i>Sylvia borin</i>
278	Asian Desert Warbler	<i>Curruca nana</i>
279	Barred Warbler	<i>Curruca nisoria</i>
280	Lesser Whitethroat	<i>Curruca curruca</i>
281	Eastern Orphean Warbler	<i>Curruca crassirostris</i>
282	Common Whitethroat	<i>Curruca communis</i>
283	Fire-tailed Myzornis	<i>Myzornis pyrrhoura</i>
284	Golden-breasted Fulvetta	<i>Lioparus chrysotis</i>
285	Yellow-eyed Babbler	<i>Chrysomma sinense</i>
286	Jerdon's Babbler	<i>Chrysomma altirostre</i>
287	Brown-throated Fulvetta	<i>Fulvetta ludlowi</i>
288	White-browed Fulvetta	<i>Fulvetta vinipectus</i>
289	Manipur Fulvetta	<i>Fulvetta manipurensis</i>
290	Great Parrotbill	<i>Conostoma aemodium</i>
291	Brown Parrotbill	<i>Cholornis unicolor</i>
292	Grey-headed Parrotbill	<i>Psittiparus gularis</i>
293	White-breasted Parrotbill	<i>Psittiparus ruficeps</i>
294	Rufous-headed Parrotbill	<i>Psittiparus bakeri</i>
295	Spot-breasted Parrotbill	<i>Paradoxornis guttaticollis</i>
296	Lesser Rufous-headed Parrotbill	<i>Chleuasicus atrosuperciliaris</i>
297	Fulvous Parrotbill	<i>Suthora fulvifrons</i>

298	Black-throated Parrotbill	<i>Suthora nipalensis</i>
299	Striated Yuhina	<i>Staphida castaniceps</i>
300	White-naped Yuhina	<i>Yuhina bakeri</i>
301	Whiskered Yuhina	<i>Yuhina flavicollis</i>
302	Stripe-throated Yuhina	<i>Yuhina gularis</i>
303	Rufous-vented Yuhina	<i>Yuhina occipitalis</i>
304	Black-chinned Yuhina	<i>Yuhina nigrimenta</i>
305	Chestnut-flanked White-eye	<i>Zosterops erythropleurus</i>
306	White-hooded Babbler	<i>Gampsorhynchus rufulus</i>
307	Yellow-throated Fulvetta	<i>Schoeniparus cinereus</i>
308	Rufous-winged Fulvetta	<i>Schoeniparus castaneiceps</i>
309	Rufous-throated Fulvetta	<i>Schoeniparus rufogularis</i>
310	Rusty-capped Fulvetta	<i>Schoeniparus dubius</i>
311	Puff-throated Babbler	<i>Pellorneum ruficeps</i>
312	Spot-throated Babbler	<i>Pellorneum albiventris</i>
313	Buff-breasted Babbler	<i>Pellorneum tickelli</i>
314	Eyebrowed Wren Babbler	<i>Napothera epilepidota</i>
315	Long-billed Wren Babbler	<i>Napothera malacoptila</i>
316	Abbott's Babbler	<i>Malacocincla abbotti</i>
317	Streaked Wren Babbler	<i>Gypsophila brevicaudata</i>
318	Indian Grassbird	<i>Graminicola bengalensis</i>
319	Brown-cheeked Fulvetta	<i>Alcippe poioicephala</i>
320	Nepal Fulvetta	<i>Alcippe nipalensis</i>
321	Striated Laughingthrush	<i>Grammatoptila striata</i>
322	Himalayan Cutia	<i>Cutia nipalensis</i>
323	Jungle Babbler	<i>Argya striata</i>
324	Yellow-billed Babbler	<i>Argya affinis</i>
325	Common Babbler	<i>Argya caudata</i>
326	Striated Babbler	<i>Argya earlei</i>
327	Large Grey Babbler	<i>Argya malcolmi</i>
328	Rufous Babbler	<i>Argya subrufa</i>

329	White-crested Laughingthrush	<i>Garrulax leucolophus</i>
330	Lesser Necklaced Laughingthrush	<i>Garrulax monileger</i>
331	Spot-breasted Laughingthrush	<i>Garrulax merulinus</i>
332	Greater Necklaced Laughingthrush	<i>Pterorhinus pectoralis</i>
333	White-throated Laughingthrush	<i>Pterorhinus albogularis</i>
334	Rufous-necked Laughingthrush	<i>Pterorhinus ruficollis</i>
335	Chestnut-backed Laughingthrush	<i>Pterorhinus nuchalis</i>
336	Yellow-throated Laughingthrush	<i>Pterorhinus galbanus</i>
337	Wayanad Laughingthrush	<i>Pterorhinus delesserti</i>
338	Rufous-vented Laughingthrush	<i>Pterorhinus gularis</i>
339	Grey-sided Laughingthrush	<i>Pterorhinus caerulatus</i>
340	White-browed Laughingthrush	<i>Pterorhinus sannio</i>
341	Mount Victoria Babax	<i>Pterorhinus woodi</i>
342	Moustached Laughingthrush	<i>Ianthocincla cineracea</i>
343	Rufous-chinned Laughingthrush	<i>Ianthocincla rufogularis</i>
344	Spotted Laughingthrush	<i>Ianthocincla ocellata</i>
345	Streaked Laughingthrush	<i>Trochalopteron lineatum</i>
346	Bhutan Laughingthrush	<i>Trochalopteron imbricatum</i>
347	Striped Laughingthrush	<i>Trochalopteron virgatum</i>
348	Scaly Laughingthrush	<i>Trochalopteron subunicolor</i>
349	Brown-capped Laughingthrush	<i>Trochalopteron austeni</i>
350	Blue-winged Laughingthrush	<i>Trochalopteron squamatum</i>
351	Elliot's Laughingthrush	<i>Trochalopteron elliotii</i>
352	Variegated Laughingthrush	<i>Trochalopteron variegatum</i>
353	Black-faced Laughingthrush	<i>Trochalopteron affine</i>
354	Chestnut-crowned Laughingthrush	<i>Trochalopteron erythrocephalum</i>
355	Assam Laughingthrush	<i>Trochalopteron chrysopterum</i>
356	Palani Laughingthrush	<i>Montecincla fairbanki</i>
357	Rufous Sibia	<i>Heterophasia capistrata</i>
358	Grey Sibia	<i>Heterophasia gracilis</i>
359	Beautiful Sibia	<i>Heterophasia pulchella</i>
360	Long-tailed Sibia	<i>Heterophasia picaoides</i>

361	Silver-eared Mesia	<i>Leiothrix argentea</i>
362	Red-billed Leiothrix	<i>Leiothrix lutea</i>
363	Red-tailed Minla	<i>Minla ignotincta</i>
364	Rufous-backed Sibia	<i>Leioptila annectens</i>
365	Red-faced Liocichla	<i>Liocichla phoenicea</i>
366	Hoary-throated Barwing	<i>Actinodura nipalensis</i>
367	Streak-throated Barwing	<i>Actinodura waldeni</i>
368	Rusty-fronted Barwing	<i>Actinodura egertoni</i>
369	Blue-winged Minla	<i>Actinodura cyanouroptera</i>
370	Chestnut-tailed Minla	<i>Actinodura strigula</i>
371	Goldcrest	<i>Regulus regulus</i>
372	Wallcreeper	<i>Tichodroma muraria</i>
373	Indian Nuthatch	<i>Sitta castanea</i>
374	Chestnut-bellied Nuthatch	<i>Sitta cinnamoventris</i>
375	Chestnut-vented Nuthatch	<i>Sitta nagaensis</i>
376	Kashmir Nuthatch	<i>Sitta cashmirensis</i>
377	White-tailed Nuthatch	<i>Sitta himalayensis</i>
378	White-cheeked Nuthatch	<i>Sitta leucopsis</i>
379	Yunnan Nuthatch	<i>Sitta yunnanensis</i>
380	Velvet-fronted Nuthatch	<i>Sitta frontalis</i>
381	Hodgson's Treecreeper	<i>Certhia hodgsoni</i>
382	Bar-tailed Treecreeper	<i>Certhia himalayana</i>
383	Rusty-flanked Treecreeper	<i>Certhia nipalensis</i>
384	Sikkim Treecreeper	<i>Certhia discolor</i>
385	Hume's Treecreeper	<i>Certhia manipurensis</i>
386	Indian Spotted Creeper	<i>Salpornis spilonota</i>
387	Eurasian Wren	<i>Troglodytes troglodytes</i>
388	Spotted Elachura	<i>Elachura formosa</i>
389	White-throated Dipper	<i>Cinclus cinclus</i>
390	Brown Dipper	<i>Cinclus pallasii</i>
391	Malabar Starling	<i>Sturnia blythii</i>

392	Red-billed Starling	<i>Spodiopsar sericeus</i>
393	Nilgiri Thrush	<i>Zoothera neilgherriensis</i>
394	Japanese Thrush	<i>Turdus cardis</i>
395	Naumann's Thrush	<i>Turdus naumanni</i>
396	Zappeg's Flycatcher	<i>Cyanoptila cumatilis</i>
397	Finsch's Wheatear	<i>Oenanthe finschii</i>
398	Bohemian Waxwing	<i>Bombycilla garrulus</i>
399	Grey Hypocolius	<i>Hypocolius ampelinus</i>
400	Andaman Flowerpecker	<i>Dicaeum virescens</i>
401	Alpine Accentor	<i>Prunella collaris</i>
402	Altai Accentor	<i>Prunella himalayana</i>
403	Robin Accentor	<i>Prunella rubeculoides</i>
404	Rufous-breasted Accentor	<i>Prunella strophiatea</i>
405	Brown Accentor	<i>Prunella fulvescens</i>
406	Black-throated Accentor	<i>Prunella atrogularis</i>
407	Maroon-backed Accentor	<i>Prunella immaculata</i>
408	Spanish Sparrow	<i>Passer hispaniolensis</i>
409	Sind Sparrow	<i>Passer pyrrhonotus</i>
410	Russet Sparrow	<i>Passer cinnamomeus</i>
411	Eurasian Tree Sparrow	<i>Passer montanus</i>
412	Yellow-throated Sparrow	<i>Gymnoris xanthocollis</i>
413	Rock Sparrow	<i>Petronia petronia</i>
414	Pale Rockfinch	<i>Carpodacus brachydactyla</i>
415	Black-winged Snowfinch	<i>Montifringilla adamsi</i>
416	White-rumped Snowfinch	<i>Onychopruthus taczanowskii</i>
417	Rufous-necked Snowfinch	<i>Pyrgilauda ruficollis</i>
418	Blanford's Snowfinch	<i>Pyrgilauda blanfordi</i>
419	Meadow Pipit	<i>Anthus pratensis</i>
420	Pale Rosefinch	<i>Carpodacus stoliczkae</i>
421	Three-banded Rosefinch	<i>Carpodacus trifasciatus</i>
422	Crimson-winged Finch	<i>Rhodopechys sanguineus</i>

423	Desert Finch	<i>Rhodospiza obsoleta</i>
424	Eurasian Siskin	<i>Spinus spinus</i>
425	Rustic Bunting	<i>Emberiza rustica</i>
-	Rock Pigeon (Wild-type)	<i>Columba livia</i> (See next section)

d. Removal from both Schedule I and II

Feral Pigeons (*Columba livia*) are wild-breeding birds that originated from domesticated pigeons. They have successfully established in all cities and towns and are turning into a nuisance. Residents are forced to try different ways to keep them off buildings, windows, and lofts. Such efforts may be curtailed if Feral Pigeon were to figure in any Schedule. However, this will exclude truly cliff-nesting populations of wild Rock Pigeons that will remain under Schedule II.

Reference cited:

Praveen J., Jayapal, R., & Pittie, A., 2021. Checklist of the birds of India (v5.1). Website: <http://www.indianbirds.in/india/> [Date of publication: 31 October, 2021].



**CENTRE FOR ENVIRONMENTAL
LAW, EDUCATION, RESEARCH
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BENGALURU**



EXAMINATION OF THE BIOLOGICAL DIVERSITY (AMENDMENT) BILL, 2021

**SUBMISSION OF WRITTEN MEMORANDA/SUGGESTIONS TO
THE JOINT COMMITTEE ON THE BIOLOGICAL DIVERSITY
(AMENDMENT) BILL, 2021**

SUBMITTED BY

**CENTRE FOR ENVIRONMENTAL LAW, EDUCATION,
RESEARCH AND ADVOCACY, NATIONAL LAW SCHOOL
OF INDIA UNIVERSITY, BENGALURU**

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THE BIOLOGICAL (AMENDMENT) BILL, 2021: AN EXPOSITORY SCRUTINY

The Indian Parliament passed the Biological Diversity Act, 2002 (hereinafter called BD Act 2002) on February 5, 2003, which seeks to address the preservation of biological diversity, long-term use of its constituents, and equitable distribution of the benefits derived from the use of biological resources occurring in the country, especially when biological resources are accessed for research, patents, transfer of results and commercial utilisation of biological resources. The principal Act has been drafted in pursuance to the country's obligations under the United Nations' 1992 Convention on Biological Diversity, to which India is a signatory. The Act's Preamble deems it important to provide for the protection, long-term sustainable use, and equal distribution of the advantages emerging from the use of biological resources, as well as to give effect to the aforementioned Convention. The objectives of the Act are to be effectuated with the aid of a decentralised three-tiered mechanism comprising the National Biodiversity Authority, the State Biodiversity Boards, and the Biodiversity Management Committees. Nearly twenty years after its enactment, an amendment to the Act was introduced in the Lok Sabha on 9th Dec, 2021, aims to address concerns raised by stakeholders representing Indian system of medicine sector, seed sector, industry sector and research sector.

In line with the demands raised by these interest groups the Amendment Bill seeks to *inter alia* (i) encourage cultivation of medicinal plants so as to reduce pressure on their wild variants; (ii) encourage Indian system of medicine; (iii) decriminalise certain provisions and (iv) encourage greater international investments in biological resources, including exploration, patenting, and commercialization, without jeopardising national interest.¹

Some of the pertinent changes introduced by the Amendment Bill and their implications have been highlighted in the table below:

¹ State of Objects and Reasons, Biological Diversity (Amendment) Bill, 2021
http://164.100.47.4/BillsTexts/LSBillTexts/Asintroduced/158_2021_LS_Eng.pdf (last visited Jan. 3, 2022).



	BIOLOGICAL DIVERSITY ACT, 2002	THE BIOLOGICAL DIVERSITY (AMENDMENT) BILL, 2021	IMPLICATIONS OF THE PROPOSED AMENDMENTS
Preamble	The Act's principal goals as enunciated in the Preamble is to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto. However, the words 'fair and equitable' only appear in the Preamble and not in the bare text of the statute.	In line with the obligations under the Nagoya Protocol, several provisions of the 2002 Act which simply spoke of equitable sharing of benefits have been amended to include 'fair and equitable' sharing. Some of the sections which have been amended to incorporate the word 'fair' are as under: Section 8(4): The words 'fair and equitable' substituted for 'equitable' to clauses (a) and (d) under the definition of Chairperson and appointment of non – official members; Section 18 (3): Under the functions and powers of the National Biodiversity Authority (NBA), clause (a) has substituted the words 'fair and equitable'; Section 19 (3A): The sub-section 3A is a new addition which states that if the NBA is of the opinion that if any activity is detrimental and contrary to the objectives of conservation and sustainable use biodiversity or fair and equitable sharing of benefits, the same shall be restricted by the authority; Section 21(1): Determination of 'fair and	One of the three objectives of the Convention on Biological Diversity is for Parties to make genetic resources more accessible while guaranteeing that benefits derived from their use are shared fairly and equitably among providers. Access to and use of traditional knowledge linked with such genetic resources is likewise covered by the concept of fair and equitable benefit sharing. The Amendment Bill draws from India's specific obligations under the Nagoya Protocol to the Convention on Biological Diversity which seeks to ensure that the benefits derived from the use of biological resources and associated traditional knowledge are shared in a fair and equitable manner among the indigenous and local communities. Neither the CBD nor the Nagoya Protocol exemplifies 'fair and equitable' sharing of benefits. While the Amendment Bill has proposed the incorporation of the words 'fair and equitable' to ensure that the benefits derived from the use of biological resources and associated traditional knowledge are shared in a fair and equitable manner among the indigenous and local communities, by failing to define what is 'fair and equitable' or identifying the parameters against which a transaction should be judged so as to be qualified as 'fair and equitable', it leaves room for multiple interpretations. Recommendation: We understand that 'fair and equitable' are to be



		equitable’ benefit sharing by National Biodiversity Authority, substituted for the word ‘equitable’; Section 22(4): Board of State Biodiversity Board (SBA), words substituted under the eligibility requirement of Chairperson; Section 53: Under execution of determination or order, for the words “benefit sharing”, the words “fair and equitable sharing of benefits” shall be substituted;	determined on a case to case basis. It is recommended that a yardstick for determination may be given by means of a proviso to sub-section (1) of Section 21: “Provided that in determining “fair and equitable” sharing of benefits, the following factors may be considered: - Quantity of Biological Resources Consumed - Quantity of Commercial Utilisation or Units Produced - Total Annual Gross Sales - and such other factors as may be deemed appropriate”
New Definitions	Not defined	(a) “access” means collecting, procuring or possessing any biological resource occurring in or obtained from India or associated traditional knowledge thereto, for the purposes of research or bio-survey or commercial utilisation;	All the different uses that the BD Act, 2002 envisages for biological resources would need ‘access’ to such resources as a prerequisite. In this regard, the Amendment Bill by defining access has made up for a deficiency which was apparent in the 2002 Act. However, the definition of access in the Amendment Bill also includes ‘possessing’ any biological resource. The Amendment Bill has attempted to water down the penal sanctions under the principal Act and has also decriminalised certain provisions, but the inclusion of the word ‘possession’ could substantially increase the ambit of the Act to include all such entities who may be in possession of biological resources with either no intention of undertaking research or bio-survey or commercial utilisation; or undertaking research or bio-survey or commercial utilisation at a later date. This inclusion definitely needs to be relooked. Recommendation: i. There needs to be clarity in the amendment to distinguish between mere possession, and possession for



			the purposes of research or bio-survey or commercial utilisation.
	Not defined	(fa) “derivative” means a naturally occurring biochemical compound or metabolism of biological resources, even if it does not contain functional units of heredity;’	The revised definition of biological resources replaces the term by-products with the term ‘derivative’ which justifies the inclusion of this definition.
	Not defined	“India” means the territory of India as referred to in article 1 of the Constitution, its territorial waters, seabed and sub-soil underlying such waters, continental shelf, exclusive economic zone or any other maritime zone as referred to in the Territorial Waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976, and the air space above its territory;	Before the Convention on Biological Diversity, plant genetic resources were generally considered a “common heritage of mankind,” a common good that is freely accessible to all. The CBD asserted the sovereign rights of states over their natural resources. In line with this, the definition clarifies the territorial extent of India and identifies the areas and topography and the biological resources occurring over which would fall within India’s jurisdiction.
Revised definitions	“benefit claimers” means the conservers of biological resources, their by-products, creators and holders of knowledge and information relating to the use of such biological resources, innovations and practices associated with such use and application.	(aa) “benefit claimers” means the conservers of biological resources, their by-products, creators or holders of associated traditional knowledge thereto (excluding codified traditional knowledge only for Indians) and information relating to the use of such biological resources, innovations and practices associated with such use and application;	Traditional knowledge may be reduced to writing (codified). In India, the Indian systems of medicine or AYUSH have codified knowledge systems including the Ayurvedic system of medicine, the Siddha system, the Unani Tibb systems and others. By excluding codified traditional knowledge this provision has been aligned with the change suggested in Section 7 of the Act. It is appropriate and a welcome move to exclude the holder of codified traditional knowledge and as such AYUSH practitioners would not be eligible to claim benefits under the Act.



	(c) “biological resources” means plants, animals and micro-organisms or parts thereof, their genetic material and by-products (excluding value added products) with actual or potential use or value, but does not include human genetic material;	‘(c) “biological resources” include plants, animals, micro-organisms or parts of their genetic material, derivatives (excluding value added products), with actual or potential use or value for humanity, but does not include human genetic material;	The word ‘includes’ has been substituted for the word ‘means’. Several judicial decisions have clarified that the word ‘includes’ is used by the legislature when the intention is to enlarge the meaning of the expression defined so as to confine it to not only such things as they signify according to their natural import but also those things which the clause declares that they shall include.² Therefore, by using the word ‘includes’ the scope of defining what comes within the definition of biological resources has been enlarged and is no longer restricted to the elements identified in the definition. By making the definition inclusive, the drafters have made scope for the inclusion of more categories of biological resources within the ambit of the term (so long as the nexus of these additional included items with the definition is not lost). There persists ambiguity on what is to be considered as a ‘Value Added Product’ (VAP). Value added products are those that may comprise of portions or extracts of plants or animals in an unrecognizable and physically inseparable form. The distinction of value added product (as defined under Section 2(p) of the Act) from bio-resource (as defined under Section 2(c) of the Act) is essential in determining whether there is a requirement to obtain approval from the NBA in the instance of a patent application. The National Green Tribunal held that ABS shall apply to castor oil, considering it a bio-resource in light of commercial purposes and held that no ABS shall apply to castor oil if it is deemed in the context of agricultural purposes. Similarly, the question of whether waste paper would constitute as bio-resource or not was left unanswered by the Court. The Controller of Patents had granted the applicant and considered that the applicant

² P. Kasilingam & Ors. v. P.S.G. College Of Technology & Ors 1995 SCC Supl. (2) 348; N.D.P. Namboodripad v. Union of India (2007) 4 SCC 502.



			need not seek NBA's approval after the applicant argued that egg shells do not constitute bio-resource, relying on the definition of sustainable use under Section 2(o) of the Act, thus substantiating that egg shells do not have the potential to cause the decline of any component of biological diversity. The NBA has neither recognised nor provided an exhaustive list of VAP over which exemption can be sought under Sections 2(c) and 2(p) of the Act. There is also no clarification in the Act as to what physically inseparable refers to. This calls for a well-harmonised and established definition by various recognized authorities. For instance, where a patent application was filed by a Section 3(2) company, the Coconut Development Board categorised coconut oil as a VAP, while the NBA considers it as a bio-resource, thus requiring prior intimation/approval.
	(d) "bio-survey and bio-utilisation" means survey or collection of species, subspecies, genes, components and extracts of biological resource for any purpose and includes characterisation, inventorisation and bioassay;	(d) "bio-survey" means survey or collection of any taxa, varieties, genes, components and extracts of biological resource for any purpose.	The Amendment Bill has completely done away with "bio-utilisation." This implies that anyone who makes use of biological resources for bio-utilisation would not need to comply with the requirements of Act. Some environmentalists have raised concerns about the consequences that this exclusion could lead to and have also termed this move as regressive. The major implication of leaving out bio-utilisation could create greater scope for bio-piracy. A number of activities like characterisation, inventorisation and bioassay, which are undertaken with commercial interest, would remain outside the purview of the Act.³ This could also mean that research undertaken to understand physical, chemical and

³ 'Bio-resources: Amendment bill dilutes BD Act, raises concerns', THE INDIAN EXPRESS, Dec. 18, 2021 <https://www.newindianexpress.com/states/tamil-nadu/2021/dec/18/bio-resources-amendment-bill-dilutes-bd-act-raises-concerns-2396807.html>



			other characteristics of a biological resource or the potency of a substance have all been left outside the purview of the Bill, leading to questions about whether they would at all be regulated.
Definition shifted	Definitions of the terms ‘cultivar’, ‘folk variety’ and ‘land race’ included under Chapter X which deals with Biodiversity Management Committees.	Definition of these terms has been shifted to the interpretation clause by the Amendment Bill. Further, the responsibility of conservation of biological resources, including cultivars, folk varieties and landraces, incentive has been given to the Central Government and the State Government in addition to the Biodiversity Management Committees.	
Inclusion of Foreign Controlled Company	3(2) The persons who shall be required to take the approval of the National Biodiversity Authority under sub-section (1) are the following, namely: - (a) a person who is not a citizen of India; (b) a citizen of India, who is a non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961; (c) a body corporate, association or organization- (i) not incorporated or registered in India; or (ii) incorporated or registered in India under any law for the time being in force which has any non-Indian participation in its share capital or management.	Section 3 sub-section (2) clause (c) sub-clause (ii): incorporated or registered in India under any law for the time being in force, which is a foreign controlled company. (b) “foreign controlled company” means a foreign company within the meaning of clause (42) of section 2 of the Companies Act, 2013 which is under the control of a foreigner.	Section 3(2)(c)(ii) of the Amendment Bill has substituted ‘non-Indian participation in its share capital or management’ for a ‘foreign controlled company.’ This could imply that companies incorporated or registered in India which have foreign participation in their share capital or management would not require the permission of the NBA for extracting biological resources from India. This in turn would also deprive the local communities of any benefits that would be derived from the use of biological resources. The amended Section 7 as proposed by the Amendment Bill also does not accommodate this group of entities that have been excluded from Section 3. There is another concern with the inclusion of foreign



			controlled company as proposed by the Amendment Bill. The definition of foreign controlled company is proposed to be the same as defined under Section 2(42) of the Companies Act, 2013. The section defines foreign controlled company to mean any company or body corporate incorporated outside India which— (a) has a place of business in India whether by itself or through an agent, physically or through electronic mode; and (b) conducts any business activity in India in any other manner. Clause 3(2)(c)(ii) by placing together “incorporated or registered in India” and “which is a foreign controlled company” creates a dichotomous situation.
Section 4 – Transfer of research results	No person shall, without the previous approval of the National Biodiversity Authority, transfer the results of any research relating to any biological resources occurring in, or obtained from, India for monetary consideration or otherwise to any person who is not a citizen of India or citizen of India who is non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961 or a body corporate or organisation which is not registered or incorporated in India or which has any non-Indian participation in its share capital or management.	No person or entity shall share or transfer any result of the research on any biological resource occurring in, or obtained or accessed from, India or associated traditional knowledge thereto, for monetary consideration or otherwise, to a person referred to in sub-section (2) of section 3, without the prior written approval of the National Biodiversity Authority, except the codified traditional knowledge which is only for Indians: Provided that the provisions of this section shall not apply if publication of research papers or dissemination of	The Amendment Bill has substituted a new section for the earlier section which requires permission for not only transferring but also sharing of research results with any foreign entity. However, sharing of codified traditional knowledge which is only for Indians cannot be shared for any monetary consideration or otherwise. The requirement laid down in the third proviso introduced by the Bill already finds a mention in the Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014. The requirement laid down by the second proviso is a new addition which mandates prior permission from the NBA if the results of the research are used for further research.



	<i>Explanation.</i>—For the purposes of this section, “transfer” does not include publication of research papers or dissemination of knowledge in any seminar or workshop, if such publication is as per the guidelines issued by the Central Government.	knowledge in any seminar or workshop involving financial benefit is as per the guidelines issued by the Central Government: Provided further that where the results of research are used for further research, then, the registration with National Biodiversity Authority shall be necessary: Provided also that if the results of research are used for commercial utilisation or for obtaining any intellectual property rights, within or outside India, prior approval of National Biodiversity Authority shall be required to be taken in accordance with the provisions of this Act.	This could imply additional benefit sharing requirements under the Act.
	Section 6 (1) No person shall apply for any intellectual property right, by whatever name called, in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the National Biodiversity Authority before making such application.	(1) Any person or entity applying for an intellectual property right, covered under sub-section (2) of section 3, by whatever name called, in or outside India, for any invention based on any research or information on a biological resource which is accessed from India, including those deposited in repositories outside India, or associated traditional knowledge thereto, shall obtain prior approval of the National Biodiversity Authority before grant of such intellectual property rights.	Scope of the section has been expanded to include associated traditional knowledge linked to a biological resource including biological resources deposited in repositories outside India. The extension of this provision to biological resources maintained in repositories outside India could be seen as a positive step towards reducing instances of biopiracy. A distinction has also been introduced between Indian and foreign applicants of Intellectual Property Rights. While a foreign applicant would have to seek prior approval from



	Provided that if a person applies for a patent, permission of the National Biodiversity Authority may be obtained after the acceptance of the patent but before the sealing of the patent by the patent authority concerned: Provided further that the National Biodiversity Authority shall dispose of the application for permission made to it within a period of ninety days from the date of receipt thereof.	(1A) Any person applying for any intellectual property right, covered under section 7, by whatever name called, in or outside India, for any invention based on any research or information on a biological resource which is accessed from India, including those deposited in repositories outside India, or associated traditional knowledge thereto, shall register with the National Biodiversity Authority before grant of such intellectual property rights. (1B) Any person covered under section 7 who has obtained intellectual property right, by whatever name called, in or outside India, for any invention based on any research or information on a biological resource which is accessed from India, including those deposited in repositories outside India, or associated traditional knowledge thereto, shall obtain prior approval of the National Biodiversity Authority at the time of commercialisation.	the NBA, an Indian applicant would have to register with the NBA before grant of IP rights. From the plain reading of the provision the distinction between registration and approval is not very clear. Whether registration with the NBA should also be perceived as ‘prior intimation’ to the State Board which is interpreted as good as a permission of the Board is not clear.
NEW EXEMPTIONS	Section 7: No person, who is a citizen of India or a body corporate, association or organisation which is registered in India, shall obtain any	7(1) No person, other than the person covered under sub-section (2) of section 3, shall access any biological resource and its associated knowledge	The Amendment Bill has restricted the need for prior intimation to the SBB only if biological resource and its associated knowledge are used for commercialisation. Use of biological resource for biosurvey which could lead to



	biological resource for commercial utilisation, or bio-survey and bio-utilisation for commercial utilisation except after giving prior intimation to the State Biodiversity Board concerned: Provided that the provisions of this section shall not apply to the local people and communities of the area, including growers and cultivators of biodiversity, and vairs and hakims, who have been practicing indigenous medicine.	for commercial utilisation, without giving prior intimation to the concerned State Biodiversity Board, subject to the provisions of clause (b) of section 23 and sub-section (2) of section 24: Provided that the provisions of this section shall not apply to the codified traditional knowledge, cultivated medicinal plants and its products, local people and communities of the area, including growers and cultivators of biodiversity, vairs, hakims and registered AYUSH practitioners who have been practicing indigenous medicines, including Indian systems of medicine for sustenance and livelihood. (2) The manner of issuing certificate of origin for cultivated medicinal plants shall be such as may be prescribed.	commercialisation has been exempted. No specific reason has been given in the State of Objects and Reasons of the Amendment Bill for this exclusion. BD Act 2002 had exempted certain categories of entities from the need of giving prior intimation. In addition to vairs, hakims and the local people and communities of the area, including growers and cultivators of biodiversity exemption has been granted to AYUSH practitioners who have been practicing indigenous medicines, including Indian systems of medicine for sustenance and livelihood. While this exclusion seeks to “encourage Indian system of medicine,” it could also lead to the exemption of several ayurvedic product industries which are registered in the name AYUSH practitioners.⁴ Further, this move seems hypocritical since about 90% of the AYUSH medicines are herbal.⁵ By exempting these practitioners, the system of medicine most reliant on biological resources would result in its depletion without any fair and equitable distribution of any benefits arising from their use. The Amendment Bill has also included exemptions on the kind of BR being used. No prior intimation to the SBB would be required if the BR in question is cultivated medicinal plants and its products or codified traditional

⁴ Bio-resources: Amendment bill dilutes BD Act, raises concerns’, THE INDIAN EXPRESS, Dec. 18, 2021 <https://www.newindianexpress.com/states/tamil-nadu/2021/dec/18/bio-resources-amendment-bill-dilutes-bd-act-raises-concerns-2396807.html>

⁵GENERAL GUIDELINES FOR DRUG DEVELOPMENT OF AYURVEDIC FORMULATIONS, CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES Ministry of AYUSH, Government of India <https://www.ayush.gov.in/docs/guideline-drug-development.pdf>



			knowledge. This exclusion however, would be an undue advantage to AYUSH companies and practitioners. Recommendation: As such it is recommended that the following be added as a proviso: <i>“Provided that the term AYUSH practitioners shall be restricted to understand any person with a qualification under Section 14 of the Indian Medicine Central Council Act, 1970.</i> <i>Provided further that the said exemption granted to such AYUSH Practitioner shall not be extended to any manufacturing process for purposes of resale.”</i> Further, the word ‘prior intimation’ has resulted in a lot of ambiguity and a slew of cases have been filed where Indian entities have sought exemption from seeking permission of the SBBs before accessing biological resources for commercial purposes. The case of <i>Divya Pharmacy</i>⁶ is a striking example of the same. When a comprehensive amendment is being contemplated, it is suggested that the following explanation be added to the section 7 <i>Explanation: For the purpose of this section prior intimation to the concerned State Biodiversity Board would mean prior permission of the State Biodiversity Board.</i>

⁶ Divya Pharmacy v. Union of India WP 3437/2016, Decided on 21 December 2018



Expanded the constitution of the National Biodiversity Authority by adding new Ministries	(b) three ex officio members to be appointed by the Central Government, one representing the Ministry dealing with Tribal Affairs and two representing the Ministry dealing with Environment and Forests of whom one shall be the Additional Director General of Forests or the Director General of Forests. No representation from State Boards. non-official members to be appointed from amongst specialists and scientists.	(b) sixteen ex officio members to be appointed by the Central Government, representing the Ministries dealing with— (i) Agricultural Research and Education; (ii) Agriculture and Farmers Welfare; (iii) Ayurveda, Unani, Siddha, Sowa Rigpa, Yoga and Naturopathy and Homoeopathy; (iv) Biotechnology; (v) Environment and Climate Change; (vi) Forests and Wildlife; (vii) Indian Council of Forestry Research and Education; (viii) Earth Sciences; (ix) Panchayati Raj; (x) Science and Technology; (xi) Scientific and Industrial Research; (xii) Tribal Affairs; (c) four representatives from State Biodiversity Boards on rotational basis; “specialists, legal experts” added	Inclusion of new ministries aim at mainstreaming biodiversity into national policy making. The representation from the State Boards seems to a positive move as it could help to bridge the imperceptible divide between the NBA and the State Boards. Legal experts have also been explicitly added to the list of specialists.
Composition of SBB expanded	22(b) not more than five ex officio members to be appointed by the State Government to represent the concerned Departments of the State Government; (c) not more than five members to be	(b) not more than seven ex officio members to be appointed by the State Government to represent the concerned departments of the State Government, including departments dealing with	Representation from the Panchayati Raj and tribal affairs could aid in better collaboration with BMCs and the cultivators of biological resources which generally operate in the grass root level. Further, a lot of tribal belts are rich in biological resources, with many tribal communities



	appointed from amongst experts in matters relating to conservation of biological diversity, sustainable use of biological resources and equitable sharing of benefits arising out of the use of biological resources.	Panchayati Raj and tribal affairs; (c) not more than five non-official members to be appointed from amongst specialists, legal experts, scientists having special knowledge in matters relating to conservation of biological diversity, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources.	reliant on these resources for their subsistence. Therefore, representation from the department of tribal affairs could mean that tribal interests are borne in mind before access is granted.
Post of Member Secretary	No post of Member Secretary in the NBA or SBBs	“(e) a Member-Secretary, who shall have experience in matters relating to biodiversity conservation, to be appointed by the Central Government.” “10A. (1) The Member-Secretary shall be the chief coordinating officer and the convener of the National Biodiversity Authority and shall assist that Authority in the discharge of its functions under this Act. (2) The Member-Secretary shall perform such other functions as may be prescribed.”	Inclusion of the post of ‘Member-Secretary for the NBA and the SBBs. While the practice of appointing a Member Secretary for the NBA and the SBBs were already in place, the appointments were made in pursuance of administrative orders and were not statutorily backed. Giving statutory recognition to the post of the Member Secretaries could allow the Central Government to wield more power in the functioning of the NBA with its own appointees.
NBA given power to reject approval	Power only given to State Boards under Section 24(2)	19“(3A) The National Biodiversity Authority shall, while granting approval under this section, determine the benefit sharing in such manner as may be	This would imply that foreign individuals and entities applying to the NBA and Indian IP right applicants could face rejections, if the NBA finds that the activity is detrimental or contrary to the objectives of conservation



		specified by regulations made in this behalf: Provided that if the National Biodiversity Authority is of the opinion that such an activity is detrimental or contrary to the objectives of conservation and sustainable use of biodiversity or fair and equitable sharing of benefits arising out of such activity, it may, by order, for reasons to be recorded in writing, prohibit or restrict any such activity:	and sustainable use of biodiversity or fair and equitable sharing of benefits arising out of such activity. This power was already vested on the NBA under Rule 16 of the Biological Diversity Rules 2004 and Regulation 16 of the ABS Regulations.
NBA and SBBs has to also notify rejections in the public domain	19(4) The National Biodiversity Authority shall give public notice of every approval granted by it.	Section 19“(4): The National Biodiversity Authority shall place in public domain details of every approval granted or rejected under this section. Section 24(4): The State Biodiversity Board shall place in public domain the details of every approval granted or rejected under this section.”.	As per the Amendment Bill, the NBA and SBBs would be obligated to give mandatory public notice of approvals and rejections of requests. This can be seen as a positive development since public intimation about rejections could aid in improving transparency of the process of approvals and rejections.
Determination of fair and equitable benefit sharing by National Biodiversity Authority	21(1) The National Biodiversity Authority shall while granting approvals under section 19 or section 20 ensure that the terms and conditions subject to which approval is granted secures equitable sharing of benefits arising out of the use of accessed biological resources, their by-products, innovations and practices associated with their use and applications and knowledge relating	21(1) The National Biodiversity Authority shall, while determining benefit sharing for the approval granted under this Act, ensure that the terms and conditions subject to which the approval is granted secures fair and equitable sharing of benefits arising out of the use of accessed biological resources, their derivatives, innovations and practices associated with their use and applications	The explicit mention of Biodiversity Management Committee represented by the National Biodiversity Authority and the exclusion of benefit claimers seems to imply that the benefit claimers who are in fact conservers and creators of biological resources and associated knowledge would have no role to play in negotiating the terms and conditions of access and benefit transfers. Further, the Amendment Bill provides that the BMC represented by the NBA would arrive at the mutually agreed terms. This in essence would mean the NBA



	thereto in accordance with mutually agreed terms and conditions between the person applying for such approval, local bodies concerned and the benefit claimers.	and knowledge relating thereto in accordance with mutually agreed terms and conditions between the person applying for such approval, and the Biodiversity Management Committee represented by the National Biodiversity Authority.”;	deciding on behalf of the BMC, which could completely suppress the voice of the local community from where the BR is sourced. This is in contravention of the principles of the Nagoya Protocol which recognizes the importance of promoting equity and fairness in negotiation of mutually agreed terms between providers and users of genetic resources. There is a hierarchy that has been established to implement what the Act seeks to achieve. This governance is exercised by National Biodiversity Authority (NBA), State Biodiversity Boards (SBB) and Biodiversity Management Committees (BMCs). An analysis of the functioning of these bodies, apparent from the provisions of the Act, reveals that local bodies have very little to no say in the decision making process. While consultation of local communities to formulate benefits sharing arrangements post the decision of allowing access is permitted by the Act, the decision of whether or not to allow access solely vests in the NBA and SBBs. The local communities are not made well-aware of their rights regarding IPR or commercial use of such traditional knowledge, thus giving rise to a centralised mechanism which may not yield the due benefits. Further, the role of the BMCs is not expanded. The proposed modifications will allow the NBA/state biodiversity boards to represent BMCs in determining benefit-sharing arrangements, diluting the role of the BMCs. Recommendations:



			A proviso to be added: <i>“Provided that the National Biodiversity Authority shall take into consideration the recommendations provided by the Biodiversity Management Committee”</i>
National Biodiversity Fund State Board Fund Local Fund	27(1)(b) all charges and royalties received by the National Biodiversity Authority under this Act; 32(1) (c) all sums received by the State Biodiversity Board from such other sources as may be decided upon by the State Government. 43(1)(e) all sums received by the Local Biodiversity Fund from such other sources as may be decided upon by the State Government.	“27(1)(b) all sums including charges and benefit sharing amount received by the National Biodiversity Authority;” Section 32 (1) (c) all sums including charges and benefit sharing amount received by the State Biodiversity Board and from such other sources as may be decided by the State Government; 43(1)(e) benefit sharing amount and all other sums received by the Local Biodiversity Fund from such other sources as may be decided by the State Government.”	All amount collected in pursuance of benefit sharing would have to be deposited in the Funds of the NBA, SBBs and BMCs.
Utilization of Funds of NBA and SBB – Section 27	27(2)(b) conservation and promotion of biological resources and development of areas from where such biological resources or knowledge associated thereto has been accessed;	27(2) (b) conservation and sustainable use of biological resources; (c) socio-economic development of areas from where such biological resources or	The Amendment Bill has replaced promotion of biological resources with sustainable use of biological resources. Literally interpreted this would imply that the Funds would not be used for promotion of biological resources, but rather for its sustainable use/sustainability.



and 32 and Section 44 – Local Fund	(c) socio-economic development of areas referred to in clause (b) in consultation with the local bodies concerned. 32(2) (c) conservation and promotion of biological resources; (d) socio-economic development of areas from where such biological resources or knowledge associated thereto has been accessed subject to any order made under section 24, in consultation with the local bodies concerned; (e) meeting the expenses incurred for the purposes authorised by this Act	associated traditional knowledge have been accessed in consultation with the Biodiversity Management Committee or local body concerned: Provided that when it is not possible to identify the area from where the biological resources or associated traditional knowledge have been accessed, the fund shall be utilised for socio-economic development of the area where such biological resources occur; (d) activities to meet the purposes of the Act.” 32(2)“(aa) channelling benefits to the benefit claimers;”; (c) conservation and sustainability of biological resources; (d) socio-economic development of areas from where such biological resources or associated traditional knowledge have been accessed in consultation with the Biodiversity Management Committee or local body concerned: Provided that when it is not possible to identify the area from where the biological resources or associated traditional	It is however unclear how, the funds would be utilized to bring in “sustainability.” Further, the distinction made in the provisos to sections 27 and 32 between places from where such biological resources or associated traditional knowledge have been accessed and area where such biological resources occur for utilization of fund for socio-economic development is also not clearing allowing greater discretion in the hands of the fund managers to utilize the funds in areas they deem fit. By vesting the responsibility of restoring areas on BMCs, the Amendment Bill seeks to place a heavy burden on the BMCs, especially considering that the BMCs would not enjoy complete freedom in the utilization of the local fund which would have to be in consultation with the State Government.



	knowledge have been accessed, the fund shall be utilised for socio-economic development of the area where such biological resources occur;”; (e) making grants or loans to the Biodiversity Management Committees; (f) the activities to meet the purposes of the Act “44. (1) The Local Biodiversity Fund shall be utilised in accordance with the regulations and the guidelines made in this behalf, for— (a) the conservation of biodiversity including restoration of areas; (b) the socio-economic development of the community without compromising the conservation concerns; and (c) the administrative expenses of the Biodiversity Management Committee. (2) The Fund shall be utilised in such manner as may be prescribed by the State Government.	
Amendment to Section 36	44(1) Subject to the provisions of sub-section (2), the management and the custody of the Local Biodiversity Fund and the purposes for which such Fund shall be applied, be in the manner as may be prescribed by the State Government. (2) The Fund shall be used for conservation and promotion of biodiversity in the areas falling within the jurisdiction of the concerned local body and for the benefit of the community in so far such use is consistent with conservation of biodiversity. . (1) The Central Government shall develop national strategies, plans, programmes for the conservation and promotion and sustainable use of	(1) The Central Government shall develop national strategies, plans, programmes for the conservation and promotion and sustainable use of biological diversity Sub-section (6) introduced by the Amendment seeks to ensure that the Central Government shall involve the National Biodiversity Authority or State Biodiversity Boards to undertake measures for conservation and



	biological diversity including measures for identification and monitoring of areas rich in biological resources, promotion of in situ, and ex situ, conservation of biological resources, incentives for research, training and public education to increase awareness with respect to biodiversity. (3) The Central Government shall, as far as practicable wherever it deems appropriate, integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral or cross sectoral plans, programmes and policies.	including measures for identification and monitoring of areas rich in biological resources, promotion of in situ, and ex situ, conservation of biological resources, including cultivars, folk varieties and landraces, incentives, for research, training and public education to increase awareness with respect to biodiversity. (3) The Central Government shall, as far as practicable wherever it deems appropriate, integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral policies or cross-sectoral plans and programmes “(6) The Central Government shall involve the National Biodiversity Authority or State Biodiversity Boards to undertake measures for conservation and sustainable use of biological diversity or associated traditional knowledge thereto.	sustainable use of biological diversity or associated traditional knowledge.
International Commitments and strategies and	New addition	Section 36A. The Central Government may authorise National Biodiversity Authority or any other organisation to take any measures necessary to monitor and regulate within the territory of India, the access and utilisation of biological	Section 36A is a positive addition by the Amendment Bill since this requirement was largely lacking. The extant BD Act, 2002 made no mention of the biological resources sourced from foreign countries which fall under the obligations of all Member States who are signatories to the Nagoya Protocol.



plans for conservation and sustainable use of biological diversity		resources obtained from a foreign country in order to meet the international obligations to which India is a signatory. 36B. (1) The State Government shall develop strategies, plans, programmes for the conservation and promotion and sustainable use of biological diversity, including measures for identification and monitoring of areas rich in biological resources, promotion of in situ and ex situ conservation of biological resources, including cultivars, folk varieties and landraces, incentives for research, training and public education to increase awareness with respect to biodiversity, in conformity with the national strategies, plans and programmes. (2) The State Government shall, as far as practicable, wherever it deems appropriate, integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral policies or cross-sectoral plans and programmes.”	Section 36B introduced by the Amendment Bill may be seen as the provisions that seeks to make good the deletion of the word ‘promotion’ of biological resources to be achieved through the utilization of NBA, SBB and BMC funds. This new provision seeks to give additional roles to the State Government in conservation and promotion and sustainable use of biological diversity something that was earlier the sole responsibility of the Central Government.
Biodiversity Heritage Sites	37(1) Without prejudice to any other law for the time being in force, the State Government may, from time to time in consultation with the local bodies, notify	37“(1) Without prejudice to any other law for the time being in force, based on the recommendations of the State Biodiversity Board, the State Government	The proviso added to the section 37(1) makes it mandatory for the SBBs to consult the local bodies and the BMCs before declaration of biodiversity heritage sites thereby mainstreaming their role in important aspects of



	in the Official Gazette, areas of biodiversity importance as biodiversity heritage sites under this Act.	may, from time to time, notify in the Official Gazette, areas of biodiversity importance as biodiversity heritage sites under this Act: Provided that the State Biodiversity Board shall consult the local body and the Biodiversity Management Committee concerned before making such recommendations.”; Addition of Section 59 A which exempted companies from special provision of the principal Act	decision making.
Section 40 – Normally Traded as Commodities	Notwithstanding anything contained in this Act, the Central Government may, in consultation with the National Biodiversity Authority, by notification in the Official Gazette, declare that the provisions of this Act shall not apply to any items, including biological resources normally traded as commodities.	Notwithstanding anything contained in this Act, the Central Government may, in consultation with the National Biodiversity Authority, by notification in the Official Gazette, declare that all or any of the provisions of this Act shall not apply to biological resources when normally traded as commodities or to the items derived from them, including agricultural wastes, as notified and cultivated medicinal plants and their products for entities covered under section 7, registered as per the regulations made or as prescribed: Provided that no exemption shall be made for the activities referred to in sub-	Amendment to Section 40 has expanded the list of commodities which are normally traded by adding agricultural wastes, medicinal cultivated plants, etc to its list. No exemptions for these commodities could be mandated under Section 6 (1) and (2) (Application for intellectual property rights not to be made without approval of National Biodiversity Authority). This provision further dilutes the categories of biological resources that come within the purview of the Act and the resources for which the benefit sharing requirement would apply.



		sections (1) and (2) of section 6.	
BMC at the intermediate level	Section 41 (1): Every local body shall constitute a Biodiversity Management Committee within its area for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.	Section 41 (1): Every local body at the Gram Panchayat level in the rural areas and at the Nagar Panchayat or Municipal Committee or Municipal Corporation level in the urban areas shall constitute a Biodiversity Management Committee (by whatever name called) within its area for the purpose of promoting conservation of landraces, folk varieties, farmers' varieties, and cultivars, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity sustainable use and documentation of biological diversity. Provided that the State Government may constitute Biodiversity Management Committees at the intermediate or district Panchayat level for achieving the objectives of this Act. (1A) The functions of Biodiversity Management Committee so constituted shall include conservation, sustainable use and documentation of biological diversity, including conservation of habitats,	The amendment proposed has added clarity about the different levels at which BMCs are to be constituted. Further, the possibility of establishing BMCs at the intermediate level can also be seen as a positive move since it could increase the coverage of authorities which in turn could mean greater coverage of areas from where biological resources could be sourced; eventually leading to conservation of biodiversity including restoration of areas and socio-economic development of the community.



		landraces, folk varieties, cultivars, domesticated breeds of animals, and microorganisms, and chronicling of associated traditional knowledge thereto relating to biological diversity. (1B) The composition of the Biodiversity Management Committee shall be such as may be prescribed by the State Government: Provided that the number of members of the said Committee shall not be less than seven and not exceeding eleven.	
Annual Statement and Audited Accounts – BMC	45. The person holding the custody of the Local Biodiversity Fund shall prepare, in such form and during each financial year at such time as may be prescribed, its annual report , giving a full account of its activities during the previous financial year, and submit a copy thereof to the concerned local body	45. The custodian of the Local Biodiversity Fund shall prepare, in such form and during each financial year at such time as may be prescribed by the State Government, its annual statement giving a full account of its activities during the previous financial year, and submit the same to the local body concerned with a copy to the State Biodiversity Board.	According to the amended Section 45, there is change in the extent of accountability of the Biodiversity Management Committees. In the earlier provision, there was just a need of an annual report giving a full account of the activities undertaken by the local body. In the amended Section, there is a need for annual statement of accounts to be furnished in addition to the list of activities undertaken. This again seems to be a positive addition, since introducing financial accountability would improve performance of the BMCs, give an overview of the beneficiaries reached out, provide oversight and ensure that there is no misappropriation of the local funds.
Execution of determination or order	Every determination of benefit sharing or order made by the National Biodiversity Authority or a State Biodiversity Board under this Act or the order made by the High Court in any	In section 53 of the principal Act, (ii) after the words “order made by the High Court”, the words “or the National Green Tribunal” shall be inserted;	The amendment to this Section includes the insertion of the National Green Tribunal to the clauses of this Section. Thus, the execution of determination or order may also come from the National Green Tribunal.



	appeal against any determination or order of the National Biodiversity Authority or a State Biodiversity Board shall, on a certificate issued by any officer of the National Biodiversity Authority or a State Biodiversity Board or the Registrar of the High Court, as the case may be, be deemed to be decree of the civil court and shall be executable in the same manner as a decree of that court.	(iii) after the words “Registrar of the High Court”, the words “or the Registrar of the National Green Tribunal” shall be inserted;	
Penalties - 55	55(1) Whoever contravenes or attempts to contravene or abets the contravention of the provisions of section 3 or section 4 or section 6 shall be punishable with imprisonment for a term which may extend to five years, or with fine which may extend to ten lakh rupees and where the damage caused exceeds ten lakh rupees such fine may commensurate with the damage caused, or with both. (2) Whoever contravenes or attempts to contravene or abets the contravention of the provisions of section 7 or any order made under sub-section (2) of section 24 shall be punishable with imprisonment for a term which may extend to three years, or with fine which may extend to five lakh rupees, or with both.	55. If any person or entity covered under sub-section (2) of section 3 or section 7 contravenes or attempts to contravene or abets the contravention of the provisions of clauses (a) and (b) of sub-section (1) of section 3 or section 4 or section 6 or section 7, such person shall be liable to pay penalty which shall not be less than one lakh rupees, but which may extend to fifty lakh rupees, but where the damage caused exceeds the amount of penalty, such penalty shall be commensurate with the damage caused, and in case, the failure or contravention continues, an additional penalty may be imposed, which shall not exceed one crore rupees and such penalty shall be decided by the adjudicating officer appointed under section 55A.	The earlier distinction in penalty is based on the kind of violator - Indian or foreign entities and the nature of provision contravened has been done away with. The Bill has also introduced a minimum penalty of one lakh which was missing in the principal Act. However, the introduction of an adjudicatory officer to decide on penalties could dilute the penal provisions of the Act.



Adjudication of penalties – Section 55 A	New provision	55A (1) For the purposes of determining the penalties under section 55, the Central Government may appoint an officer not below the rank of Joint Secretary to the Government of India or a Secretary to the State Government to be the adjudicating officer, to hold inquiry in the prescribed manner and to impose the penalty so determined: Provided that the Central Government may appoint as many adjudicating officers as may be required. (2) While holding an inquiry, the adjudicating officer shall have power to summon and enforce the attendance of any person acquainted with the facts and circumstances of the case to give evidence or to produce any document, which in the opinion of the adjudicating officer, may be useful for, or relevant to, the subject-matter of the inquiry and if, on such inquiry, he is satisfied that the person concerned has failed to comply with the provisions of clauses (a) and (b) of sub-section (1) of section 3 or section 4 or section 6 or section 7, he may impose such penalty as he thinks fit in accordance the provisions of section 55: Provided that no such penalty shall be	The introduction of adjudicating officers who are to be appointed by the Central or State Government from the ranks of bureaucrats could bring into question the fairness of the adjudicatory process. Concerns are bound to be raised especially since the Government is trying to favour Indian systems of medicine, has brought in several exemptions to BRs covered under the Act. Having an adjudicator from the executive could create conflict of interest, especially when the application for access to biological resources would also be considered and evaluated by the NBA and the SBBs that have a strong presence of officers from the executive wing of the government. Further, having officers of the ranks of Joint Secretary and Secretary who are already overburdened with other responsibilities to conduct inquiries and then decide whether provisions of the Act have been complied with or not seems preposterous.



		imposed without giving the person concerned an opportunity of being heard in the matter. (3) Any person aggrieved by the order made by the adjudicating officer under sub-section (2) may prefer an appeal to the National Green Tribunal established under section 3 of the National Green Tribunal Act, 2010. (4) Every appeal under sub-section (3) shall be filed within sixty days from the date on which the copy of the order made by the adjudicating officer is received by the aggrieved person. (5) The National Green Tribunal may, after giving the parties to the appeal an opportunity of being heard, pass such order as it thinks fit, confirming, modifying or setting aside the order appealed against.	
Power to enter, inspect, survey, etc- Section 55 B	New Provision	55B Any authority or officer empowered by the Central Government may, for the purposes of carrying out inspection, survey or any such activity, have all or any of the following powers, namely: — (a) the power to enter upon any land, vehicle, or premises and to inspect, investigate, survey, and collect	Such powers have already been given to other authorities under other environmental statutes and this can also be perceived as a positive addition to the Act.



		information and make a map of the same and seize the materials and records; (b) the powers of a civil court to compel the attendance of anyone, including witnesses and production of documents and material objects; (c) the power to issue a search-warrant; (d) the power to hold an inquiry and in the course of such inquiry, receive and record evidence; (e) such other power as may be prescribed.	
Offences to be cognizable and non-bailable	58. The offences under this Act shall be cognizable and non-bailable	Section 58 of the principal Act shall be omitted .	This amendment if incorporated could serve a heavy blow to the penal provisions which are already being sought to be diluted.
Cognizance of offences - Section 61	No Court shall take cognizance of any offence under this Act except on a complaint made by- (a) the Central Government or any authority or officer authorized in this behalf by that Government; or (b) any benefit claimer who has given notice of not less than thirty days in the prescribed manner, of such offence and of his intention to make a complaint, to	(a) in the opening portion, for the word “complaint”, the words “written complaint” shall be substituted; (b) in clause (b), for the words “any benefit claimer”, the words “any person or a benefit claimer” shall be substituted.	Persons other than benefit claimers have also been added to the list of persons who can institute complaints. While this provision is comparable to Section 19 of the Environment Protection Act, 1986, the infrequent use of section 19 bears testimony that such provisions have seldom served their purpose. Further, the benefit claimers and other persons do not get to directly file complaints but have to route it through the Central Government or authorized officers who may or may not decide to pursue the matter.



	the Central Government or the authority or officer authorized as aforesaid.		



CAPTIVE BREEDING AND ZOO POLICY IN INDIA - LESSONS FROM ARIGNAR ANNA ZOOLOGICAL PARK

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Abstract

The objectives of the study conducted at the Arignar Anna Zoological Park, Chennai, Tamil Nadu, were to assess the success of captive breeding of chosen mammalian species and to evaluate the potential of the zoo for *ex situ* conservation. Results obtained showed that the potential of the zoo to conserve those species threatened in the wild, is enormous. This was evident from the records of successful captive births of the four selected mammalian species, (*Cervus eldi eldi*, *Macaca silenus*, *Panthera tigris* and *Trachypithecus johnii*). Selection was based on: IUCN Red List status of the species, inclusion of representatives of important orders and distribution of the species in the country. Results show that zoos in India concentrate largely either on those species which are at a lower risk of extinction in the wild or on large bodied mammals like *Panthera tigris*, which are difficult to reintroduce into the wild. This is not in accordance with the IUCN Policy Statement on captive breeding. There are lacunae in the areas of prioritisation of Indian taxa for conservation breeding and in the formulation of zoo policy. This has consequently restricted, in many ways, the extent of zoo contribution to the conservation cause. Recommendations have been suggested based on the results that can improve the potential of the zoo to perform its multifaceted role. These include:

- * recognising the importance of enclosure enrichment in stimulating physiological and psychological development, which are essential in reintroducing animals to their natural environment
- * immediate formulation of a zoo policy
- * prioritisation of Indian taxa for conservation breeding
- * more attention on smaller bodied mammals like the rodents and bats, which are easier to reintroduce without compromising on visitor appeal
- * a re-evaluation of the zoos raison d'être

Key words

AAZP, zoo, conservation, mammals, captive breeding, zoo policy

Introduction

With accelerating destruction of the world's wildlife and wildlands, gene pools are becoming fragmented and diminished into gene puddles (Foose, 1983). It has been estimated that 20 per cent or more of the world's biodiversity may disappear in the next few decades, primarily due to habitat fragmentation and alteration. It is therefore necessary that more and more people and institutions become involved in efforts to conserve our imperilled environment. This is where professionally managed zoos and aquariums come into play. Zoos and aquariums assist wildlife in many ways. Although captive breeding should not be considered as the sole solution to the problem of declining

species, conservationists have recognised the need for scientifically managed captive breeding programmes in carefully selected areas.

If one were to trace the history of zoos, it is one of bringing exotic animals into captivity to serve human needs for entertainment and education. In recent years, many zoological institutions have re-evaluated their mission with conservation through captive breeding emerging as the basis on which their continuing existence is legitimised. In reality, this shift in mission has been unavoidable, as commerce in exotics has become severely restricted (Else & Lee, 1986). Faced with reduced augmentation of captive stock through continued harvesting of wild populations, the future of zoos depends increasingly upon

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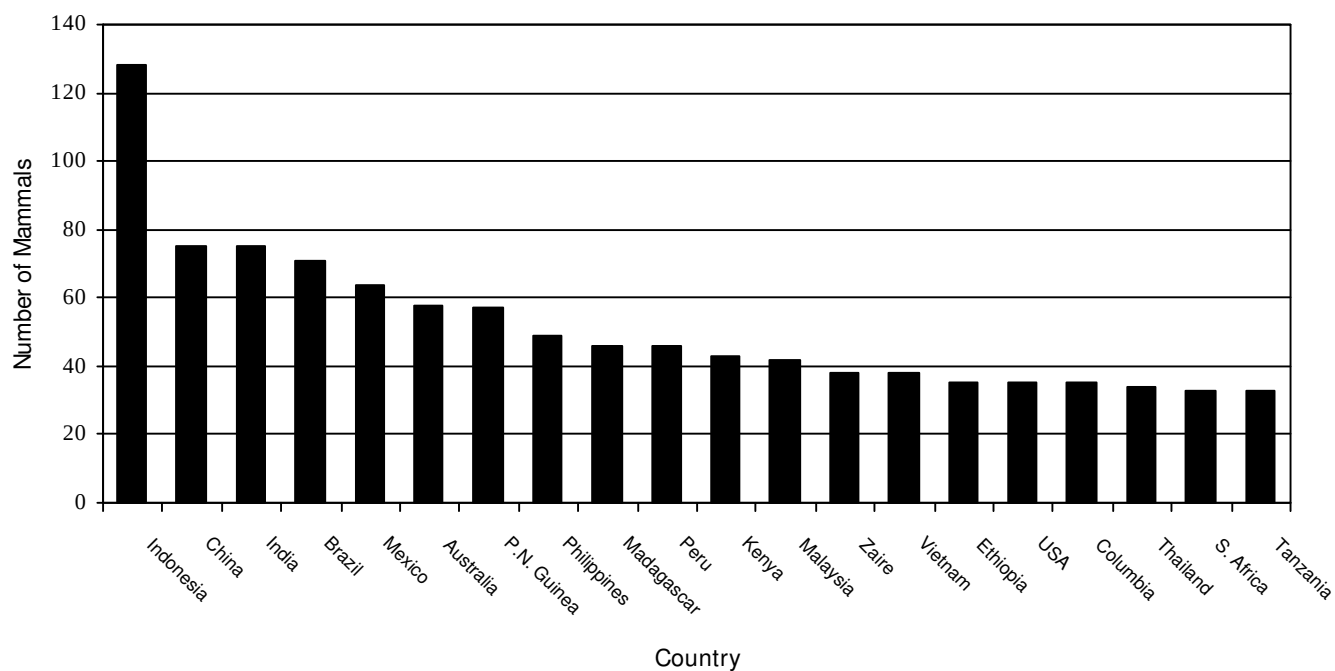


Figure 1. Countries containing the highest numbers of IUCN threatened mammal species. India ranks second along with China (75 species) in the list (IUCN, 1996).

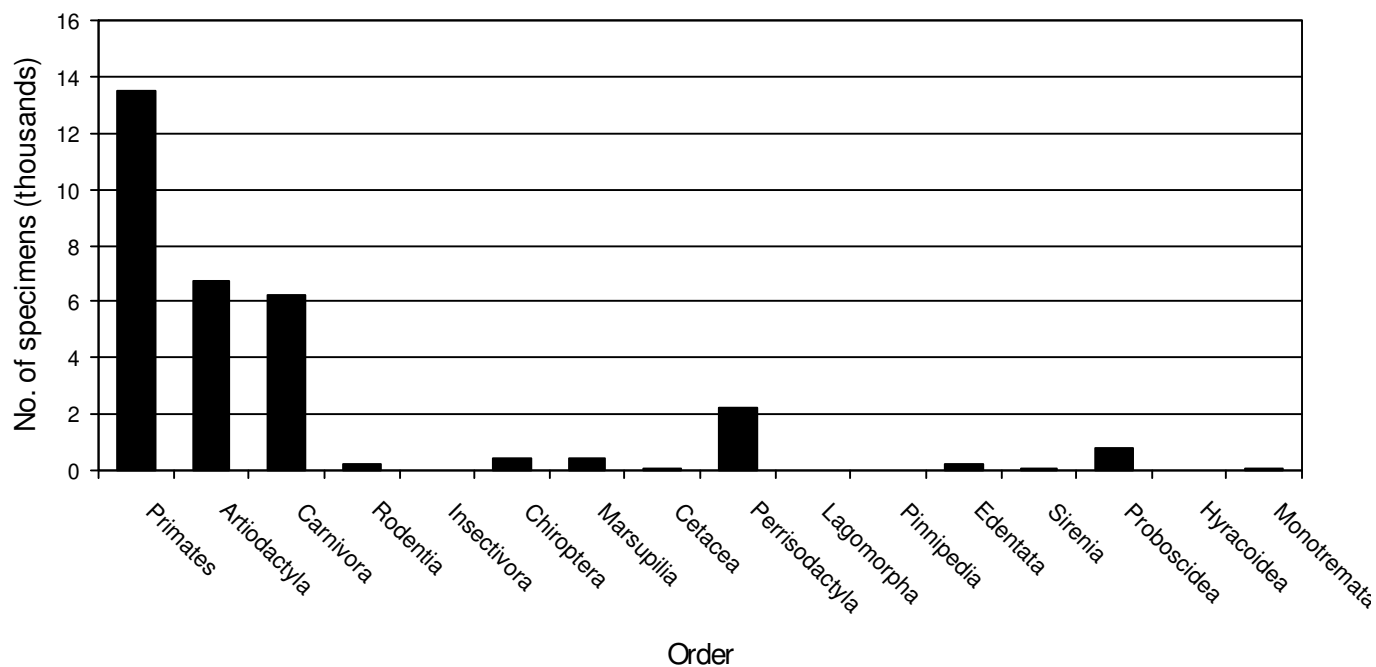


Figure 2. Number of specimens of IUCN threatened mammalian taxa held in captivity. Only 50 per cent of threatened primates, artiodactyla and carnivora are represented (Magin et al., 1994).

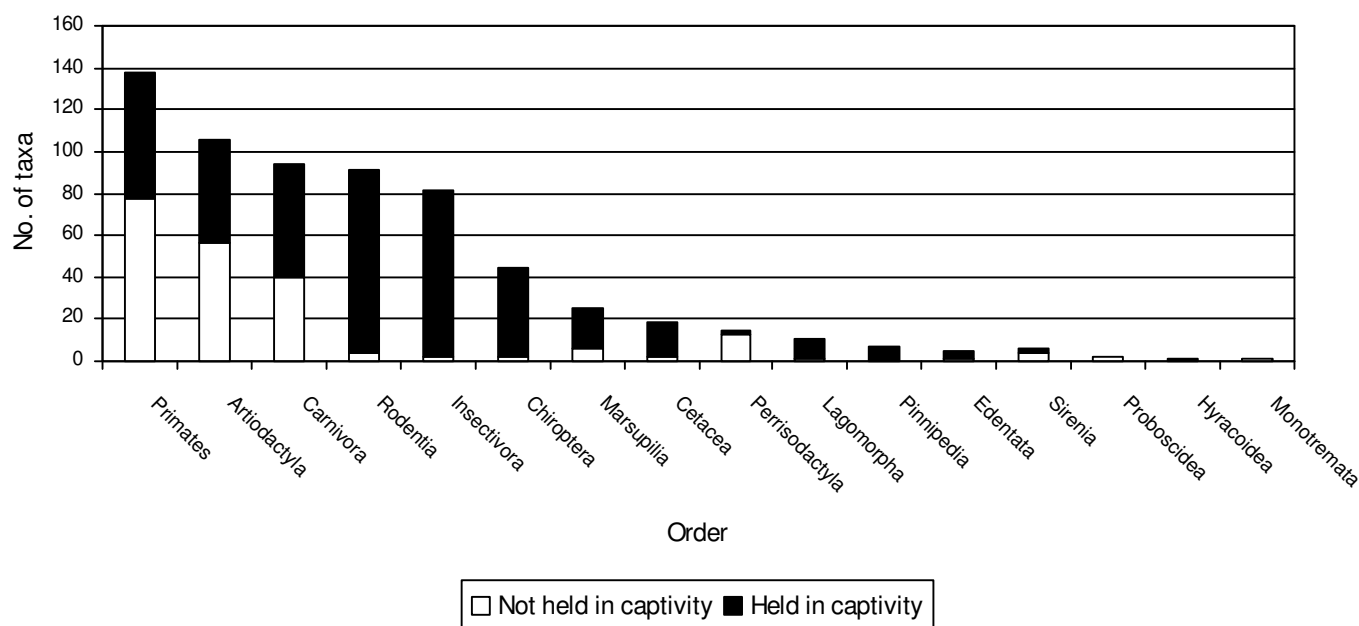


Figure 3. The numbers of IUCN threatened mammalian taxa held in captivity are indicated (Magin et al., 1994). Orders consisting of smaller mammals like Rodentia are poorly represented.

the development of self-sustaining captive populations from brood stock on hand (Else & Lee, 1986). Survival of many taxa depend on the interactive management of both wild and captive populations. Moreover, as wild populations are reduced and fragmented, captive collections and zoo facilities are becoming larger, more naturalistic and better co-ordinated. Wild and captive populations are converging in terms of the kinds of management that must be employed for their survival (Foose, 1983).

In addition to the above, zoos can act as demographic and genetic reservoirs from which infusions of “new blood” may be obtained or new populations founded (Conway, 1980). Finally, zoos have at last conveyed the message that ultimately they may provide the last refuge for many species of animals which face extinction in the wild. The gulf that exists between conservationists concerned with the wild and those involved in captive breeding will have to be bridged to meet the challenge of the diminishing wild in order that strategies may be developed to prevent the slide into extinction of some selected species (Rawlins, 1985).

Global geographic distribution of zoos and aquaria

There are approximately 1150 zoos, aquaria and affiliated captive breeding facilities worldwide of which 878 reported their addresses to the International Zoo YearBook. At least 83 countries possess one or more of these institutions (Magin et al, 1994).

Aims of the study

The study was conducted at Arignar Anna Zoological Park, Vandalur, Chennai, during the period between December 1997 and April 1998. It focused on the following aspects of captive breeding:

- Analysis of the composition of total mammalian species housed at the zoo and comparison with the IUCN Policy Statement on captive breeding.
- Trends in captive births at the study site and their contribution to the conservation scenario.
- Enclosure enrichment, food in captivity and their relevance to the physical/physiological well-being of the animals.

Study Site

The Madras Zoo was one of the first zoos in India started during the year 1855. The Government of Tamil Nadu decided to create a modern zoological park in the Vandalur Reserve Forest area under the control of the forest department. So, the old zoo was shifted to Vandalur and its new incarnation began. This is one of the biggest zoos in Asia extending to an area of 510 ha. The existing landscape has been utilised as it is and all the animals are exhibited in large open moated island type of enclosures with simulated conditions.

Location

Arignar Anna Zoological Park is situated in Chengalpettu District on the southern Trunk Road between Chennai and Chengalpettu. It is 32 km south of Chennai and 22 km north of

Table 1. Information on species under study

Species	IUCN Status	Order	Family	Distribution
<i>Antelope cervicapra</i>	LR-lc	Artiodactyla		All over the Indian plains
<i>Cervus eldi eldi</i>	CR	Artiodactyla	Cervidae	Keibul Lamjao National Park, Manipur
<i>Macaca silenus</i>	EN	Primates	Ceropithecidae	Western Ghats
<i>Panthera tigris</i>	EN	Carnivora	Felidae	All over India except NW
<i>Trachypithecus johnii</i>	VU	Primates	Ceropithecidae	Western ghats

Chengalpettu.

Vegetation type

Habitat of the park comes under the tropical dry evergreen scrub, a degraded forest mostly comprising thorny bushes.

Methodology

Criteria for choice of species

The five mammalian species chosen for the study are *Antelope cervicapra* (Blackbuck), *Cervus eldi eldi* (Sangai), *Macaca silenus* (Lion-tailed Macaque), *Panthera tigris* (Indian Tiger) and *Trachypithecus johnii* (Nilgiri Langur)

The criteria based on which the selection of the species were made are:

- Each of the chosen species belong to different IUCN categories.
- Representatives of important families and orders are represented here. Some species are restricted to parts of India with respect to distribution while the others are more commonly found in areas distributed in most parts of the country.

Data collection

Data was collected from the following sources using the following methods:

Studbook information: Every individual species housed in the zoo is enlisted in the studbook. It gives information on sex, date of birth/date of arrival, name, origin, name of sire/dam if captive born etc.

Animal history sheets: In addition to the studbook information it gives an idea on the general health of the animal, relevant medical treatments if any, comments on general behaviour, etc.

On-field observations: This included observations of enrichment of the various enclosures, interaction between the animals at feeding times, etc.

Interaction with animal keepers: This helped establish the identity of certain animals. This was important in interpreting observations on dominance, social behaviour etc. especially among the primates.

Results and discussion

The total number of mammalian species at AAZP is 46, of which 11 are exotics (non-native species) and are not included in the

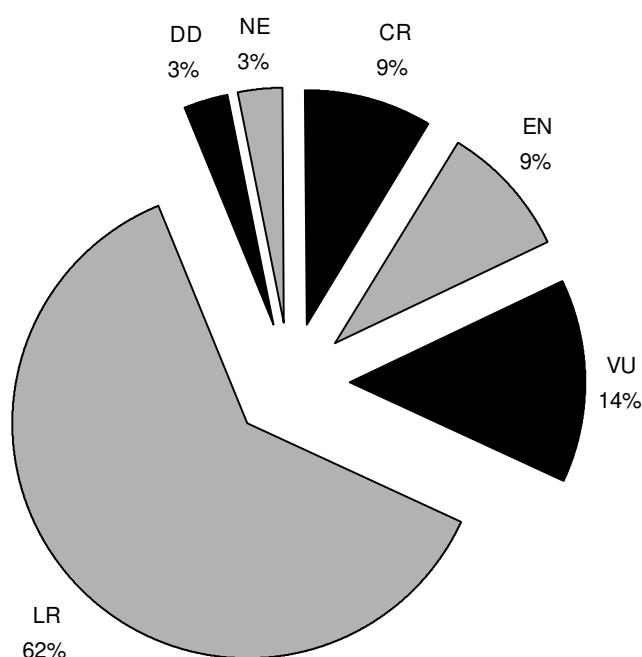


Figure 4. Per cent composition of total mammalian species at AAZP, excluding exotics (CR = Critically Endangered, EN = Endangered, VU = Vulnerable, LR = Lower Risk, NE = Not Evaluated, DD = Data Deficient)

analysis. A break up of these species based on IUCN criteria (Fig. 4) as derived by Indian field biologists at an Indian Mammal Conservation Assessment and Management Plan workshop (Molur *et al.*, 1998) shows that 62 per cent of the mammals in the Zoo belong to one of the Lower Risk categories while only 32 per cent come under a threatened category (CR= 9 %; EN= 9 %; VU= 14 %). Of the total mammal species kept at the zoo (n= 46), exotics comprise 24 per cent.

The IUCN Policy Statement mentions the following criteria for prioritisation of captive breeding in zoos:

- Increased efforts towards breeding and housing local animals.
- Least expenditure on procurement of exotics.

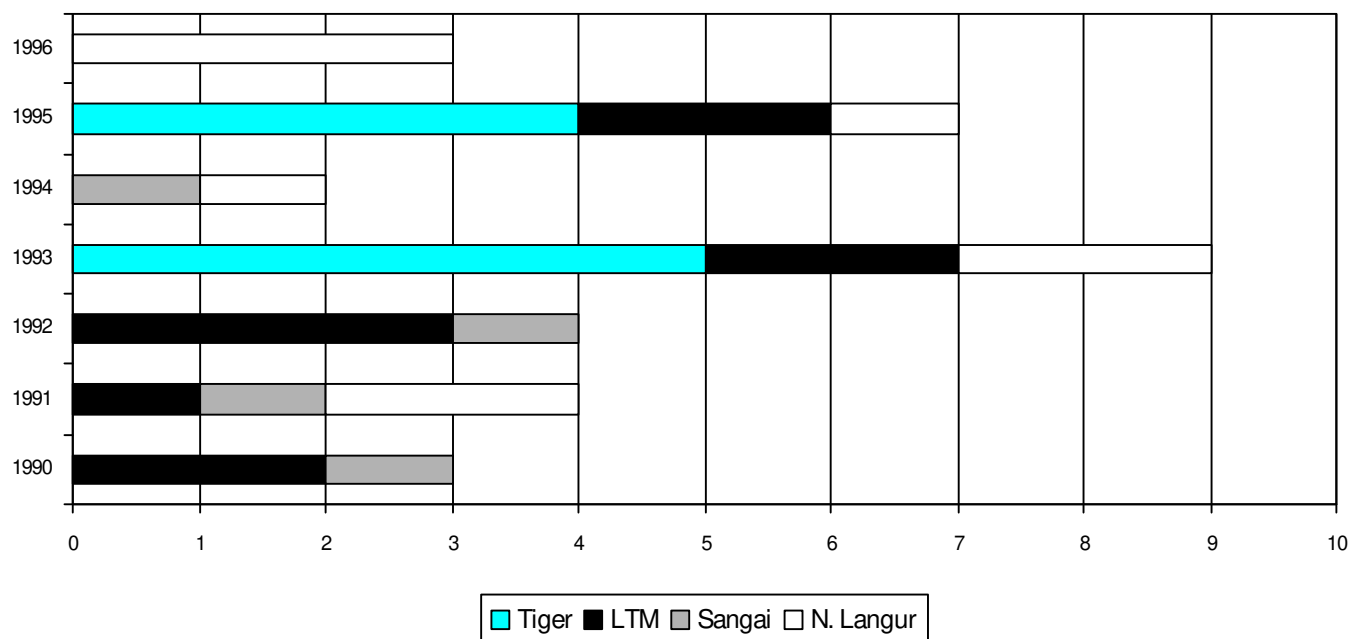


Figure 5. Total individual births of the four chosen species at AAZP, Vandalur

● Greatest efforts towards conservation of species belonging to the threatened category. The results of Fig. 4 evidently are contrary to this, suggesting that the focus of the AAZP is largely restricted to exhibitionism which is controlled by visitor appeal, rather than in conservation of threatened species.

Trends in deaths and births from 1990 to 1996

Results from Figures 5 and 6 show fluctuating trends in both births and deaths of the animals studied. Comparison with data from other prominent zoos in India supported this trend (Courtesy: CZA database). However, the results seem to indicate 1994 as a problem year with not as many births as could be

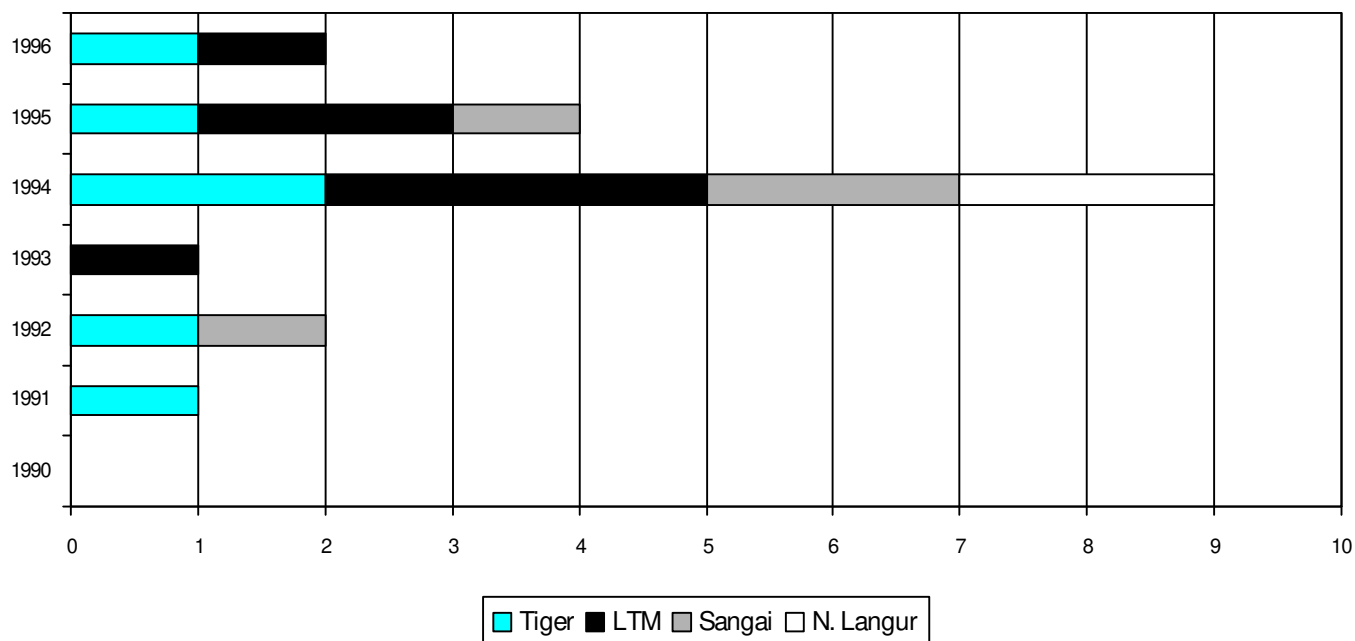


Figure 6. Total individual deaths of the four chosen species at AAZP, Vandalur

expected, but with a considerably high death toll. Investigations revealed varying causes:

Environmental: There were heavy rains in 1994, which resulted in deaths of animals belonging to many species.

Management related: Example: Introduction of a new individual (LTM) into a well established group showing all signs of a strong pack order, resulted in death due to infighting.

Medical: Possibly better care exists, that was unavailable in the previous and forthcoming years than the year in question

Another reason for zoo deaths is the condition of animals obtained by zoo exchange programmes. A sick animal may not appear physically sick until the last stages of the illness (Manoharan, pers. comm.). There have been instances where animals brought into the zoo by exchange have died as a result of illness contracted earlier. This, coupled with stress endured during the course of transfer, takes a toll on the animals life.

Success of captive propagation at AAZP with respect to the species studied

Figure 7 conveys information regarding the potential of a zoo to contribute to conservation through captive breeding. The trend of the success rate of captive births at AAZP was compared with relevant data from other prominent zoological institutions in the country. The data on these other institutions was obtained from the Central Zoo Authority's Annual Report on Breeding in Zoos across Indian cities. The comparison showed equal or more often, fewer captive births of the species selected for this study in the other institutions. This leads to the conclusion that when compared with some prominent zoos, the number of captive births at AAZP is higher, with respect to the species chosen.

Observations on enclosures

LTM enclosure: Visual observation of this enclosure and its animals was compared with the sole reference on enclosure enrichment at AAZP (Ponnuswamy & Paulraj, 1990). The enclosure has many trees and a lot of vegetation which helps the animals spend a great deal of time foraging for fruits etc., as they would in the wild. The moats are well watered with abundant fish. The vegetation and the water in the moats attract a lot of insects which form a part of the LTM's diet (Ponnuswamy & Paulraj, 1990).

Blackbuck enclosure: Blackbucks have been shifted from the enclosure originally built for them. Though it encompasses a large area which meets their physical requirement, herbs and shrubs which are an important aspect of enrichment (Ponnuswamy & Paulraj, 1990) are noticeably absent. Due to limited foraging the animals appear restless.

The number of blackbucks has grown uncontrollably, leading to competition for food. Older and larger animals dominate at feeding times. Free access of this enclosure to the neighbouring Cheetal enclosure puts added pressure during mealtimes with the Cheetals intruding into Blackbuck territory.

Nilgiri Langur: The enclosure is similar to that of the LTM. Larger

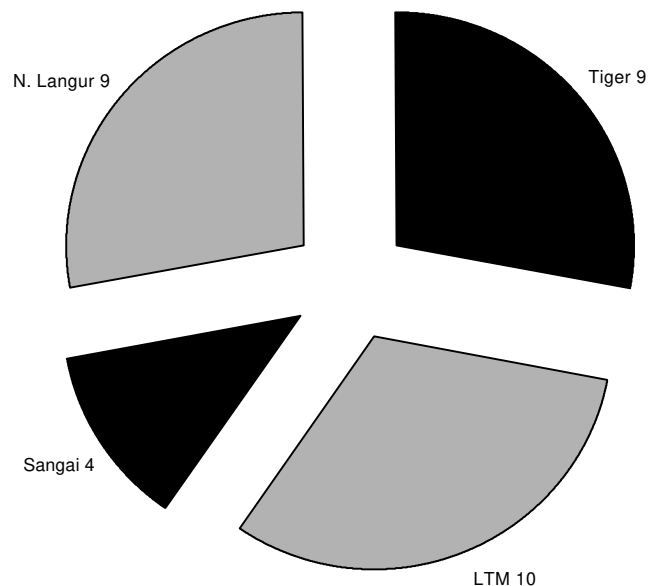


Figure 7. The success of captive propagation at AAZP.

shrubs and trees are present here as the Nilgiri Langur spends longer time on the trees and tree tops.

Conclusion

The contribution of zoos to conservation via captive breeding is important especially for species which are threatened in the wild. However, most zoos today concentrate on either large bodied mammals and/or on Lower Risk species as was found in this study. The problems associated with maintaining large-bodied mammals are higher per capita costs, greater space requirements, lower breeding potential, greater difficulty in reintroduction. More than 30 of the 46 mammalian species at AAZP are large bodied. This scenario is not optimum for the efficient use of resources because of the above reasons (Balmford *et al.*, 1996), as well as the following.

The next rational step after successful captive breeding programmes is reintroduction (Wilson & Price, 1994). Small bodied mammals as compared to large bodied mammals are better breeders, less expensive to maintain, both in zoo resources and space. Perhaps, most importantly, many are easier to reintroduce. (Balmford *et al.*, 1996). The problems of reintroducing a large bodied carnivore like the tiger or a large herbivore like the elephant have been debated for a long time. Tigers can turn into man eaters or can target livestock as easy prey, while elephants are notorious for aggression and destroying property. The possibility of such threats to human life and the magnitude of threats to property posed by the reintroductions of smaller mammals such as rodents and bats for instance are very minimal.

Of all Indian mammals, 60 percent are bats and rodents -- all small bodied mammals (Molur *et al.*, 1997). This leads one to emphasise on the importance of prioritisation of Indian taxa for conservation breeding by Indian zoos. It is time that zoos start concentrating on the economic and the biological realities of captive breeding.

Enclosure enrichment and the correct diet in captivity are important factors which influence the success of captive births in a zoo. Stress related with improper enclosure design has been known to affect the breeding potential of the animal.

The potential is evident from the records of successful captive births at AAZP. In order to maximise the contribution of zoos towards conservation, there is an immediate need for policy formulation. This involves selection of criteria with respect to captive breeding in such a way that the zoo is able to juggle between its dual roles of maintaining 'visitor appeal' as well as conservation objectives. The need to focus on species which have long stood neglect has emerged as a priority as well. Maintaining visitor appeal may not be so difficult as it is not necessarily only the larger animals that can fascinate visitors in a zoo. Studies have shown that though large, charismatic taxa such as the big cats, elephants etc. are important in drawing visitors to the zoo, imaginative exhibits of small-bodied taxa are equally popular once they enter. In some cases small creatures have even been effective in increasing zoo attendance (Balmford *et al.*, 1996). Other studies have also proved that there is no tendency for those exhibits with larger mammals to be more popular with the visitors (Balmford *et al.*, 1996). Thus more attention can be directed towards the smaller bodied mammals without compromising on visitors appeal. The second task is more difficult to achieve. A correct balance of a much needed formulation of zoo policy along with economical and biological foresight with respect to captive breeding ought to be able to

strengthen the zoos contribution to conservation.

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COASTAL REGULATION ZONE MANAGEMENT AND THE GRANT OF POST FACTO CLEARANCES: THE CASE OF VANASHAKTI & ANR. V. UOI & ORS.

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Coastal Regulation Zone Management and The Grant of Post Facto Clearances: The Case of Vanashakti & Anr. V. UOI & Ors.

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Introduction

The Coastal Regulation Zone (“CRZ”) Notification, 1991 represents the first comprehensive legislative document that categorically deals with the management and conservation of India’s vast coastline. The Notification, together with successive amendments, has been hailed as a progressive law that espouses coastal protection measures and guards against unregulated development. However, over the past few years, the regulatory structure under the Notification has faced certain constraints, leading to the dilution of its rigour. One such constraint has been particularly evident in the handling of illegalities arising from the commencement of project activities without the prior approval of the Coastal Zone Management Authority (“CZMA”). Recent trends point towards a rising tendency where project proponents who have commenced industry activity in violation of the Notification have sought to regularise their violations by seeking post facto clearances. As per the mandate of the Notification, all project activities attracting the provisions of the Notification must necessarily obtain prior CRZ clearance from the concerned CZMA prior to their commencement.^[1] However, in many an instance, project proponents who have commenced activities in violation of the due process of law have cured the default by obtaining requisite clearance post the commencement of the activity.^[2] This trend raises many concerns as it effectively creates a back door for other environmentally harmful activities to be regularised within the legal framework.

The grant of post facto clearances in matters having an ecological bearing is not a new phenomenon. In fact, granting post facto environmental clearances is firmly vouched by the highly debated Environment Impact Assessment Notification, 2020, making it the new wrinkle. In the context of the CRZ regulatory regime as well, this trend is surfacing at an alarming rate. To make things worse, the Ministry of Environment, Forest and Climate Change (“MoEFCC”) recently issued a notification, which statutorily recognizes and permits the grant of CRZ clearances through the retrospective route. While the move of the government is laudable to an extent for attempting to give possible violators a window of opportunity in regularising their activities, on the contrary, the Notification also paints a picture of legal condonation. It Recognizing the drastic consequences of such a move, the Bombay High Court has offered some respite in this regard by delving into the legal validity of the impugned notification in the case of *Vanashakti & Anr. v Union of India & Ors.*^[3]

Background of the Case

The factual matrix of the case is such that the Petitioners, vide a public interest litigation, challenged the validity of an Office Memorandum issued by the MoEFCC. The Office Memorandum lays down the procedure for dealing with violations arising from not obtaining prior clearance under the CRZ Notification by project proponents. As per the terms of Office Memorandum, all permissible activities which had commenced work in a coastal regulation zone without obtaining prior clearance would be permitted to be brought under compliance based on the recommendations of the Coastal Zone Management Authority (“CZMA”). To this effect, as a conditional requirement of making reparations for the damage caused, violators would be required to undertake certain activities under the Compensatory Conservation Plan and the Community Resource Augmentation Plan. The Petitioners challenged this Office Memorandum on the ground that it paves way for *ex-post facto* grant of clearances, enabling regularization of otherwise illegal projects. The main thrust of the Petitioners’ arguments was that the creation of such a window of compliance dilutes fundamental principles of environmental jurisprudence and hits at the core objectives of the Environment (Protection) Act, 1986.

Drawing reference to precedents clarifying the position of *post facto* environmental clearance, the Bombay Court noted the contents of the Office Memorandum have the effect of diluting rigours of the provisions of the Environment (Protection) Act and other related legislations. Further, the Court observed that despite being bound by the *ratio decidendi* laid down in the case of *Alembic Pharmaceutical Limited v Rohit Prajapati*^[4] the government elected to follow the contrary. Expressing disapproval for the manner in which illegalities are being regularised, the Court vide its order restrained the Ministry from granting any clearances or permission on the basis of the impugned office memorandum.

Environmental and Legal Dimensions of Post-Facto Approvals

The concept of ex post facto environmental clearances is one which is not sustainable in law. It is an anathema to the objectives of the Environmental (Protection) Act, 1986 and reflects a system of weak environmental governance. As the Apex Court observed in the *Alembic Pharmaceuticals* case, “environment law cannot countenance the notion of an ex post facto clearance as it goes against the basic principles underlying environmental law and policy”.

Subversion of the Precautionary Principle

On the first count, the grant of post facto clearances is a blatant subversion of the precautionary principle, as it creates a window for throwing caution to the wind. The precautionary principle postulates sound decision making in the face of scientific uncertainty. It advocates forethought in strategic human activity, in part to assess the true nature and consequences of a particular activity and in part, to cope with ambiguous risks. As for environmental decision making, the precautionary principle ensures that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them. Thereby, it helps to deter grave or irreversible harm to the environment or human health in the absence of scientific certainty.^[5]

The process of granting environment clearances encapsulates this principle of treading with caution as it lays down a clear-cut procedure to assess the risks associated with a particular industrial activity. This principle facilitates a prior merit review comprising of factual, technical and legal aspects of any developmental projects. It ensures (a) that the state and statutory authorities anticipate, deter and stifle the cause of environmental degradation, (b) that scientific uncertainty shall not act as a ground to put off measures preventing environmental degradation and (c) that the industrialist or developer bears the burden of proving that the proposed activity is environmental sound.^[6] Thus, in effect, the precautionary principle serves as a normative commitment^[7] that will help narrow uncertainty between the cause and effect of environmental damage.

The grant of ex-post facto clearance undermines the very essence of the precautionary principle. Post facto clearance means doing away with the due diligence or reasonable care that must necessarily be taken while approving any industrial or development initiative at the very inception. It thus hinders the possibility of conducting an exhaustive assessment of environmental risks associated with a certain activity. This approach overlooks the damage already caused to the environment by the industries, downgrades the importance of the assessment made prior to granting clearances and reduces the entire process to merely a mechanical exercise.^[8] Particularly, when the assessment relates to highly fragile eco-system such as the coastal zone, post facto clearances will only blur the actual environmental harm and in turn reduces the entire process to a mere bureaucratic nod for a particular project.

Dilution of the Polluter Pays Principle

The Polluter Pays Principle evolved in the wake of rapid industrial development, as a means of holding polluters accountable for their actions and to internalize the environmental costs of damage ensued.^[9] However, though the polluter pays principle was devised as a preventive mechanism to deter activities having drastic environmental consequences, it has served as a most sought-after ticket for industrialists who can pay their way out of violations. The grant of ex-post facto clearance stands in favor of this *modus operandi*, as it implies that violations -which should have been prevented in the first place – can be condoned by simply paying a price; a price which in many cases is affordable. It gives a clean chit to industries despite the possibly irreversible damage that might have occurred by their activities. Thus, it dilutes the polluters pay principle to that of a ‘pollute and ‘pay’ principle as affluent industries which recklessly undertake industrial activities are simply absolved by paying for the damage.

Over the past few years, this trend of resorting to ex post facto CRZ clearances by compensating for violations has been very evident. For instance, in the case of *Jalbiradari and Ors. v. Ministry of Environment & Forests and Ors.*^[10] the Court ordered the project proponent to pay 25 Lakhs as environment compensation and suspended the project for four months to until further recommendations from MoEFCC, SEIAA and the CZMA could be sought. However, as almost ninety-nine percent of the project was completed by the time the matter was brought to the notice of the Court, there was no other viable alternative but to allow the continuation of the project subject to conditions in the post facto clearance. This depicts how in most cases, the hands of the Courts as well are tied, as projects would have already progressed to a substantial extent. On the contrary in very rare cases such as that of *Hazira Macchimar Samiti and Ors. v. Union of India and Ors.*^[11] the Court adopted a different approach by recognising the fact that no amount of compensation would be adequate enough to warrant the continuation of the industrial activity. The Court, in this case, was called on to deliberate on the legality of post facto clearance for the expansion of port activities in the inter-tidal zone of Hajira District, Surat. Interestingly, the Court stayed the impugned EC and imposed a heavy penalty of 25 crores on the respondents as cost for restoring the damage caused.

The impugned Office Memorandum further enfeebles the polluter pays principle as it follows a compensatory route for condoning the illegality of the projects functioning without clearances and fails to acknowledge the inverse relationship between these unchecked projects and deteriorating environment. It fails to acknowledge situations where no amount of compensation or penalty can undo irreparable ecological damage. Specifically, in terms of coastal eco-systems, which feature a higher level of vulnerability owing to the topographical features, the Memorandum is paving way for unheeded disaster in the making.

Implication of the Order

The order of the Bombay High Court bears much significance for the environmental legal framework and regulatory system. On the regulatory front, it is laudable for creating accountability on the regulatory authorities. It cannot be denied that illegalities under the CRZ Notification have persisted in part due to the lackadaisical approach of the concerned authorities. If activities have commenced unchecked and without requisite clearances, it implies the lack of due diligence on part of the concerned authorities. Through its disapprobation of bureaucratic entanglements typically involved in allowing illegal activities going unchecked, the Court has raised a clarion call for stringent vigilance under the CRZ Notification.

Secondly, through its order, the Court reassures the principles of environmental law. It has positive implication in the way in which post facto allowances will be granted in future. Through its affirmation for placing environmental principles on the highest pedestal, the Court re-affirms that environmental protection can longer be compromised in the name of industrial development. Particularly in dealing with ecologically fragile zones such as the coastal zone, environmental protection cannot be jeopardised through a mere compensatory scheme.

In the persistent debate between trade and environment, the baton is most often handed to the cause of economic development. As in most cases deliberated upon in the past, the option of stifling such development is not viewed as a viable one since the projects so commenced have beneficial implications in generating labour, human resources and the economy as a whole. Furthermore, since most projects present a situation of ‘*fait accompli*’, where there is no going back to the preliminary environmental harm caused, the Courts are helpless but to recommend grant of approvals, permissions or clearances subject to certain conditions, fines or penalties.^[12] However, in situations where violations have caused irreversible damage, a stern precedent must be laid down. A relevant example in this regard is the stringent approach undertaken by the court in the case of *Kerala State Coastal Zone Management Authority v. State of Kerala, Maradu Municipality & Ors*. In the said case, the Court ordered for the demolition apartment complexes constructed in violation of the CRZ Notification. In doing so, the court indirectly issued a warning that judiciary means business while upholding the norm of sustainable development. Similarly, in the present case, by placing strict reliance on contours of the environmental laws in place, the Court has highlighted that environmental clearances are not merely a mechanical exercise but must be viewed with utmost diligence and reasonable care.

[1] Coastal Regulation Zone Notification, 2019, Notification No. G.S.R. 37(E) ¶ 7.

[2] See S.P. Muthuraman and Ors v. Union of India and Ors., MANU/GT/0116/2015, Goa State Coastal Zone Management Authority and Ors. 2001 (2) ALLMR 224.

[3] Public Interest Litigation No. 8540 of 2021

[4] (2020) SCC 347

[5] Sands, P. & Peel, J. Principles Of International Environmental Law, 3rd. ed., (Cambridge University Press (2012).

[6] Vellore Citizen Welfare Forum v Union of India, (1996) 5 SCC 647 at 658.

[7] Gitanjali Nain Gill, *The Precautionary Principle, Its Interpretation and Application by The Indian Judiciary: ‘When I Use A Word It Means Just What I Choose It to Mean-Neither More nor Less’ Humpty Dumpty*, Volume 21(4), 292-308.

[8] Common Cause v. Union of India, (2017) 9 SCC 499.

[9] Satish C. Shastri, *The Polluter Pays Principle’ And The Supreme Court of India*, p.108, Journal of the Indian Law Institute , January-March 2000, Vol. 42, No. 1 (January-March 2000).

[10] MANU/GT/0079/2016

[11] MANU/GT/0005/2016

[12] See, Lafarge Umiam Mining Private Limited v Union of India, (2017) 7 SCC 338

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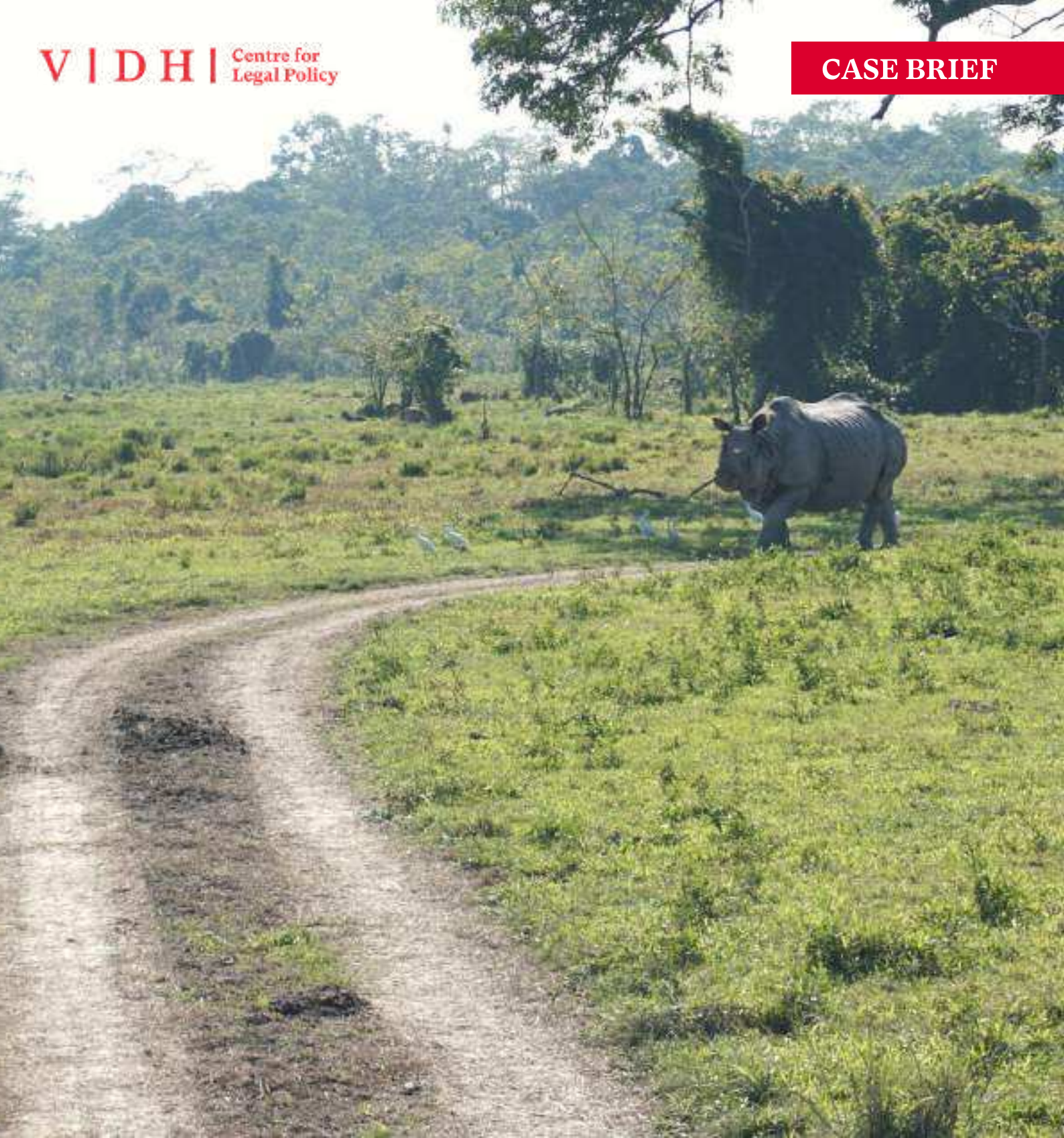
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Supreme Court on Wildlife Conservation
KAZIRANGA- KARBI ANGLONG LANDSCAPE
Consistent Usage of Environmental Principles
in Wildlife Conservation

Shyama Kuriakose

CASE BRIEF

Supreme Court on Wildlife Conservation
KAZIRANGA- KARBI ANGLONG LANDSCAPE

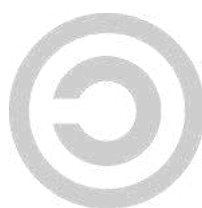
Consistent Usage of Environmental Principles
in Wildlife Conservation

Shyama Kuriakose

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The Supreme Court of India has a stellar track record on environmental protection. It is credited with taking important steps to clean Delhi's air, protecting the Taj Mahal from industrial pollution, preserving forests and halting polluting activities in the Ganga. However, the life of environmental law exists beyond the courtroom and case books. While the recognition of important environmental principles as part of the law of the land is the first step towards environmental protection, we would be failing in our duty as environmental lawyers, activists and academics if we did not scrutinise the practical implementation of these principles. We must examine whether there is compliance with the Court's orders and directions, and if not, identify and address the reasons for this.

With this objective, the Vidhi Centre for Legal Policy has been tracking the implementation of five landmark judgments of the Supreme Court of India and the National Green Tribunal ('NGT') on environmental protection. These judgments span different geographical areas-the rivers of Uttarakhand, industrial areas in Telangana, rhinoceroses' territory in Assam,

and toxic air and landfills in Delhi. They also span different environmental issues-ecological threats posed by dams, efficacy of effluent treatment plants, wildlife conservation, air pollution, and waste management. Through a combination of field research, judgment analysis and interviews with petitioners, lawyers and other stakeholders, Vidhi has produced a set of five case briefs that provide a comprehensive overview of each of these judgments and their implementation on the ground. These briefs provide the legal background for each case, present the key facts, summarise the major orders and directions of the Supreme Court and NGT, and discuss the degree of success with which these have been implemented.

In focus in this case brief, are the judgments on the conservation of the Kaziranga-Karbi Anglong Landscape in Assam. These judgements include a ban on mining in the Karbi Anglong Hills, traffic management on the highway running alongside the park and demolition of the Numaligarh Refinery Ltd. boundary wall which has been creating obstructions in the wildlife corridors. All these directions have been aimed at freeing animal movement within the landscape.

The Case of Protecting the Kaziranga-Karbi Anglong Landscape



Wildlife and Landscape Level Conservation: Legal Background

The Indian subcontinent is teeming with a huge variety of wildlife species. Their habitats are not only considered biologically diverse but are also crucial for ecological services such as watershed conservation and maintenance of biodiversity richness, among others. Given the high priority that should be afforded to conservation of wildlife species and their habitats, Indian states have declared a large network of national parks and wildlife sanctuaries under the Wildlife Protection Act, 1972 (“WPA”), which may also be referred to as ‘protected areas’ (“PA”). The WPA provides for the protection of species of wild animals, plants and their natural habitats. It has also established authorities for the implementation of its provisions and includes regulations on

hunting, management of PA and restrictions on trade in wild animals or animal articles.

Despite such a comprehensive legislation for the conservation of wildlife and its habitats, problems such as poaching, habitat degradation, human-wildlife conflicts and diversion of protected areas for development projects, among others, continue unabated. Another concern for wildlife conservation is threats posed to wildlife habitats and the free movement of animals from various infrastructure development projects. Finding no recourse in the executive/ implementing agencies, wildlife conservationists have approached the judiciary for remedies time and again. For instance, in the case of *Animal and Environment Legal Defence Fund v. Union of India*¹, the Supreme Court (“SC”) directed that fishing licenses of tribals inside the Pench National Park shall be allowed only if the conditions for implementing licenses are strictly met without any detriment to wildlife.

In *Tarun Bharat Sangh, Alwar vs. Union of India*², mining was banned in areas declared tiger reserves in the Alwar District of Rajasthan and within the Sariska National Park. According to an order under *T.N. Godavarman Thirumulpad vs Union of India*,³ the state government of Chhattisgarh was directed to take all necessary steps to save the wild buffalo population in the state from extinction. In *Indian Handicrafts Emporium v. Union of India*⁴, the apex court held that ivory trade which is dangerous to ecology should be regulated or totally prohibited. In 1995, the Centre for Environmental Law (“CEL”)-Worldwide Fund for Nature-India approached the apex court to enquire into the manner in which National Parks and Wildlife Sanctuaries are being managed in the country. The case is still ongoing with the court issuing several significant orders.⁵ Most recently, the SC allowed the National Tiger Conservation Authority’s (“NTCA”) application seeking permission to introduce

the African Cheetah into a suitable Indian habitat.⁶

In the specific context of Kaziranga National Park (“KNP”), both the SC and National Green Tribunal (“NGT”) have intervened in order to protect the park as well as the landscape abutting this park. These interventions include important directions involving a ban on mining in the Karbi Anglong Hills, traffic management on the highway running alongside the park and other steps to remove man-made obstructions in the wildlife corridors, thereby freeing animal movement within the landscape.

Relevance of the Kaziranga- Karbi Anglong landscape to wildlife conservation

Kaziranga was notified as a Reserved Forest in 1905, a Game Sanctuary in 1916, a Wildlife Sanctuary in 1950, and a National Park in



Map showing the Kaziranga National Park, and the watershed areas of Karbi Anglong hills.
(Map prepared by Debaditya Saha; Sources- Forest Dept, Assam, BRS; Map- Google Earth)

1974, the last designation taking place under the WPA. There have been six extensions between 1977 and 1999 to the area under KNP which now stands at 884 sq. km. Kaziranga hosts the single largest population of the One Horned Rhinoceros and has two-thirds of the entire world population. It was declared a world heritage site by United Nations Educational, Scientific and Cultural Organization in 1985. The KNP has one of the highest densities of tigers in India and was declared a Tiger Reserve in 2007. KNP is also part of the 3270 sq. km. large Kaziranga-Karbi Anglong Elephant Reserve. Further, the park has almost the entire population of the Eastern Swamp Deer along with several other wild animals including the Asian Elephant, Wild Buffalo, Gaur, Sambar Deer, Hog Deer, Capped Langur, Hoolock Gibbon, Sloth Bear, etc.⁷⁸⁹

The National Park is spread over two districts of Assam-Golaghat and Nagaon. Most of the park lies on the floodplains of the River Brahmaputra which flows near the northern boundary, with the Karbi Anglong hills towards the southern boundary. River Diphlu is a tributary of the Brahmaputra. The Karbi Anglong Hills act as the catchment for both the wetlands of Kaziranga as well as the Rivers Diphlu and Brahmaputra.

The Karbi Anglong Hills together with the wetlands of KNP are integral to the survival of the wildlife in this landscape. Seasonal flooding causes many animals to disperse outside the park, which is an active floodplain, towards the highlands located in and around the Karbi Anglong Hills. The KNP is surrounded by several notified forests and PAs namely Panbari Reserve Forest and Deopahar Reserve Forest in Golaghat District, Kukurakata Hill Reserve Forest, Bagser Reserve Forest, Kamakhya Hill Reserve Forest and Deosur Hill Reserve Forest (proposed) in Nagaon District, Bhumuraguri Reserve Forest in Sonitpur

District and North Karbi Anglong Wildlife Sanctuary (proposed) in Karbi Anglong district.¹⁰ Thus, maintenance of functional connectivity between KNP and the surrounding forests especially Karbi Anglong Hills is imperative to maintaining the integrity of the park and ensuring the survival of the unique wildlife of the park which evolved with this landscape.

Highlighting the importance of continuity of KNP with Karbi Anglong Hills, the NTCA in its 2014 report¹¹ stated:

“The ecological integrity and long-term survival of wildlife in this area will depend on maintaining Kaziranga flood plain with Karbi-Anglong hills and surrounding hills as single landscape complex. Karbi Anglong hills adjoin the park on the south and constitute an ecological extension of the park.”

Declaration of ESZs as an approach for conserving landscape continuity

It is quite evident from the previous sections that conservation at the landscape level and protection of buffer areas around wildlife habitats is very important. The Environment (Protection) Act (“EPA”), 1986, is relevant in this context as it empowers the central government to declare areas in which certain industrial activities can be restricted for the purpose of protecting and improving the quality of environment and preventing environmental pollution¹². As per the Environment (Protection) Rules, 1986, the central government may take into consideration proximity of the concerned site to PAs under the WPA while restricting industrial activities in such areas.¹³ Eco-Sensitive Zones (“ESZ”) is one such tool used by the central government to restrict industrial activities around the PAs under the WPA and to ensure protection of wildlife corridors.

As per MoEFCC's Guidelines for Declaration of ESZ (2011), the ESZs are expected to create some kind of "Shock Absorber" for the PAs. They would also act as a transition zone from areas of high protection to areas involving lesser protection.¹⁴ Parameters for declaring ESZs include the biological diversity of an area, maximum allowable limits of concentration of pollutants for an area, environmentally compatible land use and proximity to national parks and wildlife sanctuaries.¹⁵

It was the Wildlife Conservation Strategy, 2002 which envisaged for the first time that lands falling within 10 kms of national parks and wildlife sanctuaries should be notified as ESZs under the EPA and its rules.¹⁶ Accordingly, the Chief Wildlife Wardens of all states were directed by the Ministry of Environment, Forest and Climate Change ("MoEFCC") to list these areas and furnish proposals for notifying these areas as ESZs. Very few states responded to this direction citing that human habitation and other development-centric areas will come under the purview of ESZs if this initiative is taken forward.¹⁷

The National Wildlife Action Plan (2002-2016) also reiterated the need for protection of wildlife corridors in the context of ESZs. Instructions were also issued in 2005 by the National Board of Wildlife ("NBWL") to delineate ESZs in a site-specific context with more focus on regulation rather than on the prohibition of activities. The States/UTs were asked to prepare the ESZ proposals for all PAs in their respective states and forward the same to the MoEFCC. There was barely any progress in the declaration of ESZs by states. This prompted the Supreme Court to intervene in the Goa Foundation case in 2006.¹⁸

Supreme Court's direction on ESZs in Goa Foundation v. Union of India

The Goa Foundation, through a writ petition approached the Supreme Court to direct the closure of mining units in the state of Goa which continued to operate in violation of environmental laws. The aspect of ESZs was brought up in this matter to ascertain whether mining leases granted in close proximity to national parks and wildlife sanctuaries should be allowed to operate or not. As per its order in 2006, the MoEFCC was directed to provide an update on whether states have responded with proposals on ESZs or not and if not, the states were supposed to respond within a stipulated time frame.¹⁹ In a subsequent order in December, 2006, the court directed the MoEFCC to communicate to the states/UTs that if the states/UTs fail to send proposals on ESZs within four weeks of communication from the ministry, the court may have to consider an area of a radius of 10 kms outside the boundaries of national parks and wildlife sanctuaries as default ESZs.²⁰ The Supreme Court also directed that all those projects which have been given environmental clearance within the 10 km zone of national parks or wildlife sanctuaries before the declaration of ESZs would have to be referred to the standing committee of the NBWL for further permission. Subsequently, only a few state governments submitted their proposals to the MoEFCC. Another interesting development was the MoEFCC's initiative in issuing a comprehensive set of guidelines laying down parameters and criteria for declaring ESZs in 2011.²¹



Map showing animal corridors and commercial tourism establishments (hotels, dhabs, resorts) along NH-37 between Kaziranga National Park and Karbi Anglong hills.
(Source: Committee for delineation of corridors, Govt. of Assam)

Till December 2018, ESZs were declared for 289 National Parks and Wildlife Sanctuaries; draft notifications for 206 sanctuaries and parks were prepared and another 146 cases are in the process of being declared ESZs. The SC directed that 10 kms around the remaining 21 Sanctuaries and Parks should be declared by the MoEFCC as ESZs, with liberty to States to move an application for modification.²²

Declaration of ESZ around Kaziranga National Park

The state of Assam submitted its proposal on Eco-sensitive areas for three of the nineteen national parks and wildlife sanctuaries of the state including KNP in 2009. The proposal contained provisions for regulation on tourism, developmental activities, mining and other such environmentally degrading activities. It even provided for the monitoring mechanism, preparation of zonal master plan and zoning of the Eco-sensitive areas into

forest areas, green zones meant for human habitation and agriculture and urbanizable zones.^{23 24} (Note: The term *eco-sensitive areas* and *eco-sensitive zones* in the context of PAs have been used interchangeably in some publications).

Thereafter, the ESZ proposal for KNP was submitted to the Ministry on 28th July 2015. The State was asked to revise the proposal integrating KNP and its adjoining eight PAs. The proposal was deferred on the request of the state government.²⁵ Reports prepared by expert bodies such as the NTCA and the Centrally Empowered Committee (“CEC”) have recommended that the Assam Forest Department expedite the declaration of an ESZ around KNP at the earliest.^{26 27} According to a news report in 2019, the Assam government had approved a draft proposal for a long pending eco-sensitive zone around KNP at an average distance of 1

km from the park boundary.²⁸ The proposal for declaration of KNP was last considered by the MoEFCC's expert committee for declaration of ESZ in June 2020 wherein an ESZ of 0-6 Km around KNP was proposed by the State. The proposal was again deferred with the following observations by the committee:

"The Committee pointed out that in spite of restrictions & ban imposed by Hon'ble Court, the present proposal of ESZ for Kaziranga NP has been submitted in isolated form without integrating with eight adjoining PAs. Further, it was observed that the extent of the ESZ in most of locations are almost zero and it is referred as zero to 6.2 Km in the draft notification. The State Govt representative informed that the standalone ESZ proposal of Kaziranga NP is prepared taking into account the observation of Central Empowered Committee (CEC) constituted by Hon'ble Supreme Court.

The Committee members' along with NTCA insisted for integrated ESZ proposal with eight (8) PAs together with reserved forests as the present proposal may have long term negative impacts on the entire biodiversity of the area and need protection and conservation at this stage only. The Chairman expressed that views of the Expert Committee may suitably apprised to CEC for making proposal meaningful on the said measures.

It was observed that notifying Kaziranga National Park separately shall result inconsistencies because the ESZ area of one PA may be contagious with the other PA as such. This shall add to environmental concerns and disputes.

Based on the presentation made and discussions held, the Committee asked the State Government to formulate integrated proposal including all the eight. The revised

proposal should be sent to wildlife division of MoEFCC and also seek concurrence of NTCA."

Range Officer shall prepare inventory of different land use patterns and types of activities, industries and important corridors around the national park or wildlife sanctuary within 10 kms of his range



Committee comprising of Wildlife Warden, an Ecologist, official from the Local Self Government and an official of the Revenue Department to be formed to deliberate on the ESZ proposal.



Finalized proposal forwarded by state forest department to State Government with copy to MoEFCC for further processing and notification



Based on above deliberations, Chief Wildlife Warden would group activities into prohibited, restricted with safeguards and permissible categories.

Process of declaring ESZs around Protected Areas

Declaration of the Numaligarh No-Development Zone

The same criteria used for declaration of ESZs have been used by the government to declare No Development Zone ("NDZ") as well. The NDZ was declared within a radius of 15 km around the refinery site except towards north-west where the NDZ extends up to the eastern boundary of the KNP.²⁹ According to this notification, expansion of the industrial area, townships, infrastructure facilities and such other activities which could lead to pollution and congestion were not to be allowed, except with the prior approval of the central government.

Threats being faced in the Kaziranga Landscape and need for Judicial Intervention

The Kaziranga-Karbi Anglong landscape was severely plagued by illegal mining and stone crushing. These activities have resulted in degradation of hill slopes, drying up of streams, destruction of habitat and loss of valuable flora and fauna. Vehicular traffic on the NH-37 which passes along the boundary of the KNP and the Karbi Anglong Hills makes it very dangerous for wild animal crossings, especially in flood season. Mushrooming of tourist resorts, dhabas and hotels on the NH 37 alongside the park boundary are also causing further hindrance to free movement of wild animals. News reports of a tiger straying out of the flooded national park and ending up in a house near NH 37, is one of the most discussed instances of obstructions to animal movement.³⁰ On the other end of the spectrum, several human settlements adjacent to the park boundary are threatened by the incursion of wild animals, especially in the time of floods. Human-wildlife conflict is also common in this landscape with many incidents of big animals like One-Horned Rhinoceros, Tiger, Elephant, Wild Buffalo and Swamp deer straying into the villages. Restoring the connectivity between Karbi-Anglong and KNP is expected to reduce such conflicts for the wild animals of KNP.^{31 32}

Given the above challenges, importance of the Kaziranga-Karbi Anglong landscape and the foot-dragging by the state government in declaring an ESZ around KNP, three petitions were filed by a wildlife activist from Assam, Rohit Choudhury in the SC and NGT praying for the following:

- I. Demolition of the Numaligarh Refinery's boundary wall which comes in the way of the elephant corridor in the Numaligarh NDZ (2011)

- II. Restrictions on the speed limits of vehicles plying on the NH-37 which runs alongside KNP (2013)
- III. Ban against illegal mining around KNP in the Karbi Anglong hills and any new construction in the identified animal corridors (2019)

I. Demolition of the Numaligarh Refinery Ltd. boundary wall

The NDZ was declared in Numaligarh, keeping in mind the close proximity of Numaligarh Refinery Limited ("NRL") to the KNP boundary as well as the fact that the area is a prominent elephant corridor. While this is an important executive order, it is not effective in practice because there is no mechanism for enforcing and monitoring the prohibitions within the NDZ. As a result, many stone crushers, tea factories and brick kilns causing air pollution, have mushroomed in the NDZ.³³ Special reference must be made to the 2.2-kilometre boundary wall topped with barbed wire which was constructed in 2011 by NRL seemingly to protect its township from elephant attacks in violation of the NDZ notification and without obtaining any environment clearance. This wall with barbed wire fencing not only obstructed the elephant corridor but also fell within the NDZ and Deopahar Reserve Forest. In May 2015, a 7-years old male elephant died of haemorrhage after trying to break the wall. Reportedly, many elephants have died or been injured trying to cross the wall.³⁴

Spurred by this incident as well as the continuance of the illegal activities mentioned above, Rohit Choudhury, in his first petition, approached the NGT in 2011 for action against the alleged illegal activities including operation of stone crushers, brick kilns, tea factories and other polluting activities in the NDZ. The NGT directed the



Though the wall has been claimed to be demolished by NRL, environmentalists claim that it has been demolished partially and barbed wires are yet to be removed which still poses danger to the pachyderms. Photo taken during our field visit in December 2019.

removal of all encroachments in 2012.³⁵ Owing to non-compliance of the 2012 judgement, the Applicant approached the NGT again in 2015 to ask for relief, especially in the case of construction of the boundary wall. The NGT in its 2016 judgement held that the wall was in clear violation of the NDZ notification.³⁶ The NGT directed this wall to be demolished within a period of one month from its judgment. NRL was also ordered to pay an environmental compensation of 25 lakhs to Assam Forest Department for restoration of the area as well as to take measures to reduce man-animal conflict. The NRL filed a review application in the NGT against the 2016 judgement but the NGT did not entertain it. In response, the company appealed in the SC against the NGT's order dated August 3, 2018. The apex court upheld the NGT's decision pertaining to demolition of the wall on January 18, 2019 with the Bench orally observing that elephants have the first right on the forest.³⁷³⁸

II. Regulating traffic on NH 37 abutting Kaziranga National Park

The NH 37 remains one of the linear obstructions to free animal movement from KNP to the Karbi Anglong Hills. Several animal casualties have occurred because of speeding vehicles on the highway, especially during the annual flooding season. This led to Mr. Choudhury's second petition in the NGT in 2013 in which expansion of the NH 37 stretch between Jakhalabandha to Bokakhat through the KNP was opposed on the ground that it would lead to more deaths of wild animals. In an order in 2017, the NGT noted the observations submitted by the field director that there had been no deaths in the places where such sensors and automatic barriers were fully operational. However,



Map showing stone mining and crusher units (red balloons) which were active in Karbi Anglong hills. The yellow border is 5 km buffer around Kaziranga NP depicted in green border.
(Source- CEC Report No. 67/2019)

areas with no barriers were still experiencing animal deaths. Hearing this, the NGT gave the following directions to the state government³⁹:

- Speed breakers to be constructed on all those locations in the highway, where animal deaths have occurred; and
- Challan of Rs. 5000/- for over speeding and killing of animals over and above the amount to be paid for the offence under the Motor Vehicles Act.

III. Plan against illegal mining in the Karbi Anglong hills and new construction in the identified animal corridors

Mr. Choudhury's third petition was pertaining to illegal mining, quarrying and stone crushing activities in the Karbi Anglong hills adjoining KNP. The petitioner had written several letters to the state government as well as MoEFCC regarding this problem. Even the KNP authorities had brought up the issue of illegal mining with the state government from time to time. There was no concrete action by the officials of the Assam and Karbi Anglong Autonomous Council ("KAAC") forest departments despite all those letters.

Reports prepared by the Comptroller and Auditor General of India ("CAG") in 2011 and NTCA in 2018 pointed towards the incessant mining happening in the Karbi Anglong hills adjacent to the NH-37 which had led to drastic reduction in forest cover, compelling the wild animals to enter human settlements. Both these reports recommended a ban on mining in the Karbi Anglong hills.⁴⁰⁴¹

Mr. Choudhury filed another complaint on 16 March 2018 with the CEC, which is a Supreme Court appointed committee set up under the long running forest case of *TN Godavarman v. Union of India*.⁴² The complaint prompted a visit by CEC members to the affected mining sites. The CEC's report in 2019 highlighted the proliferation of illegal mining in Karbi Anglong hills.⁴³ Based on the CEC report findings, Supreme Court passed an order in April 2019 directing the following⁴⁴:

"that all kinds of mining and related activities along the aforesaid Kaziranga National Park area and in the entire catchment area of rivers/streams and rivulets originating in Karbi Anglong Hill ranges and flowing into Kaziranga



Construction activities were found to be ongoing unabated despite the ban. This photo was taken in Angkor corridor during our field visit in December 2019.

National Park, including Tiger Reserve are restrained."

"It further directed the Director General of Police, Assam and the concerned Superintendent of Police to ensure that no illegal mining takes place in the landscape and no transportation of illegally mined material takes place from Karbi Anglong Hills."

The 2019 CEC report also highlighted the significance of animal corridors between KNP and the Karbi Anglong Hills. The report acknowledged that uncontrolled and ever-increasing construction/ human settlements/ dhabas/ tourist lodges and hotels/ truck parking terminals had contributed to blocking the majority of the stretch of NH 37 including the designated animal corridors. Taking cognizance of the CEC findings, the Supreme Court in the same order banned all new construction on private lands connecting KNP with Karbi Anglong Hills which form part of the nine identified animal corridors namely Panbari, Hathodandy, Deosur, Haldhibari, Harmoti, Kanchanjuri, Siring, Aamguri and Bagori.

See Annexure for office correspondences and reports related to mining, summary of all judicial interventions for protection of animal corridors around KNP.

Successes and challenges in implementation of court orders

Regular follow up by Rohit Choudhury, the petitioner, with local and national agencies has helped implementation of court orders to a great extent. Concerted actions from the forest department, district administration, CEC and NTCA have also been useful to this end. During our field visits from November 28- December 3, 2019, we observed that the Field Director of KNP has been actively monitoring the situation alongside the KNP boundary. Much of the appreciation goes to the pro-active role of the NTCA and CEC which acted on the complaints filed by Mr Choudhury with a field visit and a report to the Supreme Court.

Further observations from our field visit to Kaziranga between November 28, 2019 and December 3, 2019 are as follows:

- After the April, 2019 order of the SC banning mining in Karbi Anglong area, the district administration has been successful in implementing the same in an effective manner. Even though small-scale mining continues in some parts of the region, the large-scale mechanised mining has completely stopped. Visits to a few mining sites revealed that the hills previously scarred by this activity are showing signs of natural regeneration. Assam Forest department officials, especially the park authorities are also planning activities around assisted natural regeneration of the hills and water bodies in the affected region.
- This same order had also directed a ban on new constructions in the private lands which form part of the nine identified animal corridors. We observed in the course of our field visits, several such illegal constructions across the length and breadth of NH 37 including the corridor areas.
- Pursuant to NGT's 2017 order on vehicular movement in the highway, it has

been observed that challans are being issued, but not to all over speeding vehicles. Speed cameras have not been installed anywhere till now despite earlier orders of the NGT. As per information received from the park administration, two interceptor vehicles are in operation for a few hours in the day monitoring the 66 km stretch of the highway running along the park to check that vehicle speed does not exceed the 40 kmph limit.

- According to the 2016 NGT judgement, the boundary wall of the NRL was directed to be demolished. We observed on the ground that the wall has only been partially demolished till now despite the Supreme Court judgement in 2019. A portion of the wall still stands with barbed wire fencing protruding at several places. This continues to pose danger to the elephants. Furthermore, the NRL is yet to start any restoration work as per NGT's order from 2016.

Some of the ongoing challenges which act as a hurdle towards complete implementation are as follows:



Similar truck terminals and private parking of vehicles were observed at several places on NH-37 on animal corridor areas. Photo taken during our field visit in December 2019. Reportedly, local authorities have issued office order banning parking of heavy vehicles later that month.

- There has been continued opposition and obstruction by the mining industry stakeholders to the mining ban through interventions in the Guwahati High Court and public pressure from erstwhile mine owners and workers.
- Owners of resorts and other commercial establishments continue to create new buildings on NH 37 including the animal corridor areas. The district and forest administration have been unable to restrict these activities as we found out from our field interactions and observations.
- According to CEC findings in its report from 2019, the forest department under the Karbi Anglong Autonomous Council was allowing illegal mining to carry on inside the forest tracts instead of cooperating with the KNP authorities in deterring the practice. This was being done under the pretext that stone is the prime material used for the construction of roads and bridges and the council derives the power for making laws on roads and bridges as per para 3(A)(1)(b) of the 6th Schedule to the Constitution.



A Royal Bengal Tiger took refuge inside a junk dealer's shop on NH-37 during floods of 2019. (Photo- Mohammad Rafique Islam, owner of the shop)



An underconstruction building alongside NH-37. The signboard on right states 'Animal Corridor-Elatidandi, Go Slow'. Photo taken during our field visit in December 2020.

Environmental Principles Used by Courts for Wildlife Conservation

The directions of the SC and the NGT in the three petitions related to conservation of Karbi-Anglong Hills/KNP are based on certain key environmental principles. Their use in these cases should be examined in the broader context of their deployment in Indian environmental jurisprudence. The foremost environmental obligation of the state is enshrined in Article 48A of the Constitution according to which, “*The State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country.*” Apart from Article 48A, the Courts have also placed reliance on a few environmental principles such as the *public trust doctrine*, *precautionary principle* and *sustainable development* when it comes to wildlife management.

Article 48A read with the PTD imposes a solemn duty on the state to protect its national parks and wildlife sanctuaries in trusteeship for its citizens and their coming generations. Judicial bodies have reiterated this duty of the state through landmark judgements. In *MC Mehta v. Kamal Nath*, the Supreme Court held the public trust to encompass ‘*all eco-systems operating in our natural resources*’ with the state, as a trustee, having a legal duty to protect all of these resources.⁴⁵ The Court reiterated the ratio of this iconic case in an order in *TN Godavarman v. Union of India* stating that it is the duty of the state to preserve natural resources such as forests in their pristine purity.⁴⁶

The principle of sustainable development was espoused in the *Vellore Citizens’ Welfare*

*Forum v. Union of India and Ors.*⁴⁷ When there is a genuine need to balance wildlife conservation with development concerns of the region, as seen in the case of the Kaziranga-Karbi Anglong landscape, this principle becomes important.

The other significant principle i.e. precautionary principle also plays a role in wildlife conservation especially in light of the yearly emergence of infectious diseases such as Ebola, HIV, dengue, Nipah and the now prevalent Covid 19.⁴⁸ Experts suggest that emerging infectious diseases, like the ones mentioned above have come about in the last 30 or 40 years as a result of encroachment into wild lands and changes in demography.⁴⁹ Thus, the need for a buffer zone between humans and wildlife species becomes all the more important. This principle was used in the *Goa Foundation case* when the Court insisted on the declaration of areas “*within 10 km. of the boundaries of the sanctuaries and national parks as eco-sensitive areas with a view to conserve the forest, wildlife and environment.*”⁵⁰ This suggests that courts in India have used the precautionary principle to justify the imposition of blanket protections to avert irreversible risk to ecosystems. The use of the precautionary principle in wildlife conservation is unusual, at least from an international conception of the principle, but is an indication of how courts have expanded or adapted environmental principles to support their orders.⁵¹

Application of these principles in the context of Kaziranga Karbi Anglong landscape

Even though these principles have not been specifically cited in the orders which are under the purview of this case study, it is interesting to see how the court's larger environmental jurisprudence has influenced some of its decisions here. The three key decisions pertaining to demolition of the NRL boundary wall, regulation of traffic on NH 37 and ban on mining as well as new constructions on the animal corridors are clearly a result of the courts' reliance on all three principles. In this context, the recommendations provided in the CEC report of 2019 are also important. *(Please see Annexure for status of implementation of these recommendations.)*

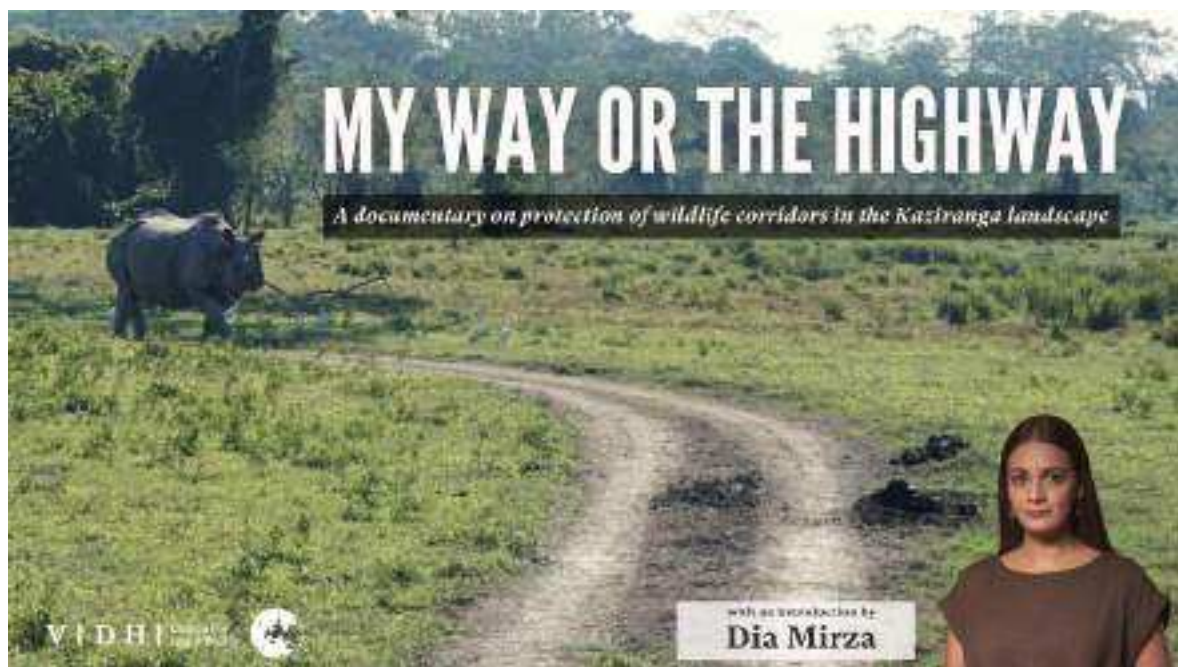
The recommendations pertaining to expediting the notification of ESZ of KNP with ground demarcation; notifying animal corridors connecting Karbi Anglong hills and KNP; and creation of a special purpose vehicle with funds for facilitating rehabilitation of degraded mining sites within the wildlife corridors and restoration of ecosystem are examples of what PTD requires the state to do, given its stewardship over the landscape.

The courts were also supposed to conduct a balancing act between the economic interests of the region and wildlife conservation. CEC's recommendation on planning tourism activities keeping in mind the carrying capacity of KNP seems to be a very clear example of the sustainable development principle.⁵² The court would have to balance the risks from tourism with the benefits that it might have for the management of wildlife within KNP.

The recommendation for total cancellation of mining permits and ban on parking are of a sweeping nature; but it is likely that the court had in mind the precautionary principle and the irreversible damage that these activities might cause to the wildlife in the region.

Conclusion

This case brief highlighting the judicial interventions for protection of the Kaziranga- Karbi Anglong landscape is especially important in the context of how competing interests of different kinds of stakeholders, be it tourism, industrial activities, livelihoods of local communities or wildlife conservation, must be balanced to obtain benefits for all. It surely is a tightrope walk for the government and courts while they try to achieve such a balance. In the specific context of this landscape, one can see that wildlife conservation has been successful to some degree inside the KNP. However, the real test of these measures is in the declaration of ESZs and protection of the wildlife corridors around the KNP without causing too much disturbance to the local communities.



My Way or the Highway is a film produced by Vidhi Centre for Legal Policy which tracks the judicial interventions for protection of wildlife corridors in Kaziranga- Karbi Anglong landscape. It is part of five films produced in association with Riverbank Studios on the implementation of environmental judgments.

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Annexure

A. Official Correspondence pertaining to Mining

Date	Details
25/02/1996	Letter from Forest Ranger, Kohora Range to DFO, Assam Wildlife Division objecting to installation of stone crushing units outside the park boundaries
18/06/2003	Letter from Director, KNP to CCF, Wildlife, Assam highlighting the impact of quarrying along hills in Karbi Anglong Hills
25/07/2007	Letter from Director, KNP to CF, Karbi Anglong Hills pointing out impact of dusts emanating from crusher units resulting in the drying up of streams
03/07/2015	Letter from Circle Officer, Bokakhat Revenue Circle to SDO, Bokakhat informing the latter about large-scale earth cutting and stone crushing activities resulting in blocking of natural outlets
07/11/2016	Letter from DFO, Bokakhat to DFO Karbi Anglong, Diphu referring to the ESZ judgement of Goa Foundation in 2006 stating that no mining activity should be permitted within 10 kms from National Park and Wildlife Sanctuary boundaries
16/11/2016	Letter from Director, KNP to PCCF, Karbi Anglong Autonomous Council, Diphu to direct Divisional Officer, Karbi Anglong to stop mining activities within a distance of 10 kms. from the boundary of KNP till the ESZ is notified.
09/10/2017	Letter from Director, KNP to PCCF, HOFF requesting for closure of stone quarries operating under the jurisdiction of Karbi Anglong Autonomous Council
07/12/2017	Letter from Director, KNP to PCCF, Karbi Anglong Autonomous Council to take necessary action
06/07/2018	Letter from Director, KNP to PCCF, HOFF observing rampant mining in the Karbi Anglong hills despite recent visit by CEC in 2018 to the mining sites in Karbi Anglong

B. Relevant Judicial Interventions

Date	Event
07/12/2012	Judgement of the National Green Tribunal in the matter Rohit Choudhury vs. Union of India(O.A. 38/2011) industrial activities in the No-Development Zone. The Court directed: - The state government to take immediate steps to remove all illegal 11 stone crushers located within the NDZ. Additionally, relocate M/S Assam Stone Crushers as it was installed prior to the 1996 NDZ Notification. - The State Government to not allow operations of 23 stone crusher units existing in the vicinity of NDZ till the necessary pollution control equipment is installed. - The State Government to close down 33 Brick Kilns located within the NDZ. Relocation of the 1 Brick Kiln established prior to the 1996 Notification. - The State Government to immediately shut down 11 miscellaneous industries (petrol pumps, saw mills, restaurant, etc.) located within the NDZ. - The SPCB to ensure no tea processing units having boiler using fossil fuel operates within the NDZ and take steps to stop the operations. - The MOEF and State Gov. to prepare a Comprehensive Action Plan and Monitoring

	Mechanism for implementation of the conditions stipulated in the 1996 Notification specifying "No Development Zone". g. MOEF and State Gov. to deposit Rs. 1,00,000/- each with the Director, KNP for conservation and restoration of flora and fauna as well as eco-sensitive zone, biodiversity of the vicinity of KNP and NDZ.
26/11/2015	Order of the National Green Tribunal in the matter Rohit Choudhury vs. Union of India (R.A. No. 25 of 2015 in O.A. No. 174 of 2013). The Tribunal directed the Director of Kaziranga National Park to conduct a surprise inspection of the road abutting Kaziranga National Park and steps that have been taken by the State of Assam in regard to prevention of animal deaths on the road by vehicular traffic.
24/08/2016	Judgement of the National Green Tribunal (Misc. App. No. 787/2015 & 1006/2015 in O.A. No. 38/2011) on Numaligarh boundary wall. The NGT directed: - Demolishing the wall with barbed wire fencing which comes in the way of the Elephant Corridor. Wall should be demolished within a period of one month. - Numaligarh Refinery Limited (NRL) to pay an environmental compensation of Rs. 25,00,000 for causing environmental damage by destruction of forest cover to build a golf course. The amount to be used to restore the environment around the NRL. - NRL to make compensatory afforestation, ten times the number of trees felled. - Adhering to the NDZ Notification, the Govt. of Assam and MOEF to ensure no development activities to take place within a radius of 15 kms of the NRL. - Govt. of Assam to take the necessary steps to notify Deopahar 'PRF' into Reserved Forest under Sec. 17 of the Assam forest Regulations 1891, which is in close proximity to KNP and used as an elephant Corridor.
17/05/2017	Order of the National Green Tribunal (Original Application No. 174 of 2013) in Rohit Choudhury Vs. Union of India & Ors. - Let on all those locations in the national highway where barriers are absent and animals died, speed breakers be provided within two weeks from today. - Every vehicle which is challaned, particularly for over speeding and for killing of animals, would be required to pay environmental compensation of Rs. 5000/- per accident, over and above the amount to be paid for offence under Motor Vehicle Act.
03/09/2018	Order by the Guwahati High Court in the matter Numaligarh Refinery Ltd vs. Union of India (W.P.(C) 5985/2019) in pursuant to the NGT Order dated 24.08.2016 directed the demolition of the wall with barbed wire fencing constructed by NRL. The HC directed an interim stay order on the demolition of the remaining boundary wall covering 8 hectares of land.
18/01/2019	Order of the Supreme Court in the matter Numaligarh Refinery Limited vs. Rohit Choudhury & Ors.(Civ Appeal Diary No. 41203 of 2018). The Court found no merit in the appeal and the same was dismissed.
12/04/2019	Order of the Supreme Court in the matter T.N. Godavarman vs. Union of India (I.A. No. 42944/2019 in W.P (C) No. 202/1995) The Court directed: - that all kinds of mining and related activities along the aforesaid Kaziranga National Park area and in the entire catchment area of rivers/streams and rivulets originating in Karbi Anglong Hill ranges and flowing into Kaziranga National Park, including Tiger Reserve are restrained. No new construction shall be permitted on private lands which form part of the nine identified animal corridors. - The Director General of Police, Assam and the concerned Superintendent of Police shall also ensure that no illegal mining takes place in the landscape and no transportation of illegally mined material takes place from Karbi Anglong Hills.

C. Relevant Reports pertaining to mining and declaration of ESZ and animal corridors

Date	Event
14/02/2011	Controller and Auditor General of India had conducted a "Performance Audit of <i>Kaziranga National Park - Issues and Challenges</i>" (Report No. 3 of 2014). The Report observed the following: - Large Scale construction of resorts, dhabas with a large amount of land retained for parking lots. - The portion of the animal corridor on the NH also used by animals for shelter during floods. - Continuous construction was found on both sides of NH 37. - Number of crushers and brick kilns were located within 10km of the boundary and some were found right on the animal corridors, which blocked the path of the elephants. - Constant mining on the Karbi Anglong Hills adjacent to the NH-37. This in turn has reduced the forest cover in the area and due to continuous noise pollution has compelled the elephants to enter human settlements. - Non declaration of ESZ has had a direct bearing on such activities detrimental to the well-being of animals due to rampant construction activities. The Report recommended: - Clearing of stretch of NH 37 from Burapahar to Bokakhat from illegal encroachments and the dhabas/restaurants need to be cleared immediately. - Banning of parking of trucks, restaurants, construction without prior permission from KNP authorities and mining activities in the Karbi Anglong Hills that causes further disturbance to the wildlife habitat.
January 2014	Committee Report reviewing Proposal submitted by Assam Government in the interest of wildlife conservation with respect to NH 37 in response to NGT direction in Rohit Choudhury v. State of Assam (OA 174/2013)
2014	Report No. 3 of 2014 of CAG observed the following: Mining in Karbi Anglong hills, unregulated growth of tourism infrastructure along NH-37, movement of traffic, parking of heavy vehicles along the highway and non-declaration of ESZ have seriously affected the movement of animals along their corridors.
06/04/2018	NTCA Report pertaining to complaint against rampant mining in Karbi Anglong Hills adjoining Kaziranga Tiger Reserve. The Report observed the following: - Stone mining activities taking place in the Kaziranga-Karbi Anglong landscape. Sound of heavy machinery busy breaking heavy boulders in the northern facing hill of Karbi Anglong Hills. - Mining and quarrying activities take place during the day time, while the transportation of broken stones to nearby stone crushers takes place at night. - Stone crushing units situated in Panbari RF and the animal corridors. The construction activities and dumping of wastes had dried up the rivulets in and around these sites. - The Southern part of Kaziranga is experiencing fast paced urbanisation, the northern and eastern ban is continuously eroded by the Brahmaputra every year, thus affected the flora and fauna population in the NP. Recommendations: - Stop all mining and mining activities operating in the Kaziranga-Karbi Anglong landscape. - Committee to be formed by the MoEFCC to review all the permissions, clearances given to stone crushers units and mining units.

	c. Assam Forest Dept. must take steps for preparation of Tiger Conservation Plan. for core, buffer and corridor and for notifying ESZ around KNP. d. Reserve boundary may be rationalized by including areas of Karbi Anglong adjoining Kaziranga.
20.04.2018	Report of NTCA regarding illegal mining in Karbi Anglong area after making field visits ▪ Extensive sound and dust pollution at the stone crusher site making it difficult for animals to move between wildlife corridors ▪ All past complaints regarding mining were referred to, in this report ▪ If the stone quarrying/mining activities are not checked and regulated, then Kaziranga may become physically isolated from Karbi Anglong forest areas resulting in choking of animal migration path which is very vital for Kaziranga with high density of wildlife. ▪ Adverse impact on environment and soil quality of agricultural lands ▪ Small streams and rivulets in and around the mining and crusher units had dried up due to siltation. Recommendations ▪ Stop all mining, quarrying, stone crushing activity in the Kaziranga – Karbi Anglong landscape with immediate effect. ▪ A committee may be constituted by MoEFCC, Government of India to review all the permissions, clearances given to stone crushers units and stone quarrying / mining units operating in the Kaziranga – Karbi Anglong landscape. ▪ The Assam Forest Department may take necessary steps for preparation of Tiger Conservation Plan for core, buffer and corridor and for notifying Eco-sensitive Zone around Kaziranga National Park & Tiger Reserve. ▪ Keeping in view the long-term conservation of species like rhinoceros, elephant and tiger, the Kaziranga Tiger Reserve boundary may be rationalized by including areas of Karbi-Anglong adjoining Kaziranga.
18/07/2018	Report of Director, KNP in response to Rohit Choudhury's RTI Application made the following observations: ▪ Rampant mining in areas located below 1.5 km from the Southern boundary of KNP. ▪ Stone mining appears unscientific as huge quantity of rubble and mining waste dumped in the mining sites. ▪ Mining waste also dumped along banks of streams. ▪ Despite closure orders from PCCF, KAAC, regular movement of stone and boulder laden dumpers in the Karbi Anglong area continues, unhindered. ▪ Mining is causing disturbance to animal movement in the corridor areas. He thereby requested concerned authorities to take necessary action for closure of mines in the animal corridors of Karbi Anglong Hills adjoining KNP.
01/03/2019	CEC Report No. 6 of 2019 in W.P.(C) No. 202 of 1995 based on Rohit Choudhary's application under Godavarman case ▪ Took cognizance of all past complaints and letters sent to various concerned agencies to order closure of illegal mining ▪ Unregulated Growth of Tourism Related Infrastructure, have a serious impediment to the free movement of wildlife along the corridors between KNP and Karbi Anglong Hills. ▪ Issue of Mining Permits in Karbi Anglong Hill Autonomous Council- Not a single mining proposal was forwarded by State to NBWL which violated the SC order of 2006 on ESZs. ▪ Conditions stipulated under Mining Plan and Environment Clearance not being complied with. ▪ Blatant violation of the Supreme Court order dated 04.12.2006 directing States to declare an area of 10kms around NPs and Sanctuaries as eco-sensitive zones. ▪ Permitted mining is in violation of the Forest Conservation Act, 1980 and is being carried out in thickly wooded areas that as per SC order dated 12.12.1996 fall in the category of deemed/recorded forests land. Despite that mining is being permitted

	without obtaining clearances under the FC Act- Mining permitted under the guise of private ownership ▪ 9 Corridors highlighted by CEC are all blocked by housing/dhabas: Lack of corridors and habitat contiguity has serious long term implications for wide ranging animals such as elephants and tigers. ▪ Rivers and streams drying up as a result of stone mining causing drinking water shortage in the dry months ▪ Agricultural lands around the hills have become unfit for cultivation ▪ Concerns raised by park authorities have not been given necessary attention by the state government and Karbi Anglong autonomous council (KAAC) ▪ In KAAC area, there is no mechanism in place either with the Mining and Geology Department or with the Environment Department to ensure compliance of the conditions of approval imposed while approving Mining Plan or Environment Clearance ▪ Mining not among subjects transferred to the KAAC inspite of which mining proposals are being permitted by the Forest Department of KAAC Recommendations ▪ Notify ESZ of KNP with ground demarcation ▪ Notify all 9 animal corridors connecting Karbi Anglong hills and KNP ▪ Cancel mining permits issued for mining by the KAAC and State of Assam ▪ Ban all types of mining along the southern boundary of KNP in the Karbi Anglong hills ▪ Remove all encroachments and illegal construction on NH 37 along the KNP ▪ Not permit any more new construction even on private lands within the animal corridors ▪ Acquire private lands forming part of animal corridors with appropriate rehabilitation packages ▪ Prohibit parking of all vehicles along NH 37 falling in the animal corridors ▪ Plan tourism activities considering carrying capacity of KNP ▪ Create a special purpose vehicle with funds for facilitating rehabilitation of degraded mining sites within the wildlife corridors and restoration of ecosystem ▪ DGP Assam, SP of Karbi Anglong Hills district, Nagaon District and Golaghat District to be responsible for preventing illegal mining in the wildlife corridors.
07.08.2019	Report on Delineation of Nine Animal Corridors Connecting Kaziranga National Park to Karbi Anglong submitted by the Committee for Delineation of Corridors constituted by Govt. of Assam Vide Order No.FRS.142/2018/474 dtd. 4th May 2019 The nine identified corridors are listed below: 1. Panbari 2. Haldhibari 3. Bagori 4. Harmati 5. Kanchanjuri 6. Hatidandi 7. Deosur 8. Chirang 9. Amguri

D. Status of Implementation of Recommendations in CEC Report No. 6 of 2019

Sl. No.	Recommendations	Status of implementation
1	Notify ESZ of KNP with ground demarcation	Draft proposal on ESZs has been approved by the state government and sent to the Centre. ¹

¹ <https://www.hindustantimes.com/india-news/assam-approves-kaziranga-eco-sensitive-zone-proposal-sends-it-to-centre/story-qhlqpDe9tb7oxvhipYQqcN.html>

2	Notify all 9 animal corridors connecting Karbi Anglong hills and KNP	A Committee for Delineation of Corridors ² came out with a Report on Delineation of Nine Animal Corridors Connecting Kaziranga National Park to Karbi-Anglong. Official notification on these identified corridors is pending.
3	Cancel mining permits issued by the Karbi Anglong Autonomous Council (KAAC) and State of Assam	No information available.
4	Prohibit parking of all vehicles along NH 37 falling in the animal corridors	District Magistrate of Golaghat issued an order on 3rd December 2019 declaring Borjuri to Bagori as a 'No Parking Zone' and prohibited parking of trucks, tankers, and trailers along both sides of the said stretch of NH 37 under section 144 CrPC ³ . However, as per the latest information from Mr. Chaudhury, parking of heavy trucks on the highway continues unhindered.
5	Plan tourism activities considering carrying capacity of KNP	No information available.
6	Create a special purpose vehicle with funds for facilitating rehabilitation of degraded mining sites within the wildlife corridors and restoration of ecosystem	No information available.

²Constituted by Govt. of Assam Vide Order No.FRS.142/2018/474 dtd. 4th May 2019

³<https://www.sentinelassam.com/north-east-india-news/assam-news/prohibition-on-parking-vehicles-in-animal-corridors-at-golaghat-district/>

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Wildlife corridors in india: Viable legal tools for species conservation?

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Abstract

Wildlife corridors, used by various species to migrate, breed and feed, are increasingly becoming relevant as essential tools for wildlife conservation. Rapid increase in industrial and infrastructural development, especially around forests, has resulted in widespread habitat fragmentation and isolation. Added to this, the growing development (for tourism, linear infrastructure etc.) around protected areas, and the altered de facto boundaries of these, have exacerbated this need. There is, however, no 'hard' statutory recognition afforded in India to wildlife corridors in spite of their established relevance in ecological conservation. Nor is there a strict prohibition on development within, and around important corridors in India. Even so, wildlife corridors have found passing mention in certain conservation law and guidelines framed thereunder, which seek to protect wildlife habitat and reduce human – wildlife conflict. These extant legal spaces have largely proved ineffective in the protection and conservation of corridors, and corridor protection and management continues to be a dormant legal space in India.

This paper seeks to analyse the various barriers to corridor conservation and management, and whether the existing legal measures are underutilised in providing legal protection to wildlife corridors, without the need of a parallel institutional framework. Through an understanding of the criticality of corridors to wildlife conservation, the adequacy of existing legal structures has been examined by the authors, and recommendations made for augmenting the current legal framework with more concrete strategies.

Keywords

Wildlife, Corridor, Law, India, Conservation

Introduction

The need to protect wildlife corridors is increasingly gaining traction globally, as habitat fragmentation becomes one of the biggest challenges to biodiversity conservation. However, despite the immediate and growing threats of climate change and other anthropogenic pressures on natural habitats, a wildlife corridor

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has yet to be formalised as a legal tool for ecological conservation in India or, indeed, elsewhere in the world. The difficulty stems from the very nature of a corridor, which may be completely different in function and form depending upon the species that is used to typify it. Nevertheless, their criticality in biodiversity conservation is moot. In this article, the authors seek to first highlight the importance and role of corridors in habitat conservation and climate change adaptation in Part I. In Part II, the potentialities for corridor conservation and management within existing legal frameworks have been attempted to be brought out – this discussion is limited to the relevant international and European legal instruments, American federal statutes and Indian laws. Part III then examines in detail the status of critical wildlife corridors in India, their status and the various challenges that are being faced in their conservation.

This article seeks to analyse the various barriers to corridor conservation and management, and also to examine whether the existing legal measures are underutilised in providing legal protection to wildlife corridors, without the need of a parallel institutional framework. Through an understanding of the criticality of corridors to wildlife conservation, the adequacy of existing legal structures in India has been examined by the authors, and recommendations made for augmenting the current framework. This has been done chiefly through a study of secondary sources: mainly scholarly articles, statutory law and scientific reports.

Part I: The role and integrity of wildlife corridors in biodiversity conservation

Definition and importance to biodiversity

Corridors, in the larger space of ecological conservation, occupy a unique niche. Their role and vitality in species conservation is well documented, but their definition is a source of constant confusion. They have been generally understood to be ‘linear landscape elements, meant to establish/facilitate connectivity across habitats and increase survivorship by increasing the diversity of specific gene pools’.¹ In more technical parlance, ecological literature defines corridors as a ‘fundamental landscape element (the other two are patch and matrix), being narrow strips of land which differ from the matrices on either side’.² While the general definition emphasises the functional role of a corridor, it gives little clarity as to its form and context. The technical definition is a sort of complement to this – silent on the functional aspects, elaborating upon the form and context. There are, however, differences of opinion as to the functional role of a corridor – some argue that they are merely temporary-use habitat connectors, while others hold the view that they are permanent integral parts of the habitat ranges of animals.³ Further, there is a stream of thought which emphasises the delineation between linkages and habitats (either temporary or permanent), in order to minimise human–wildlife conflict (essentially conceptualising corridors as non-habitat linkages between habitats).⁴ The structure and functionalities of corridors are also highly specific to the species that use them. For example, the seasonal migration patterns, prey/food availability and water requirements are completely different for tigers and elephants – and therefore the corridors connecting their habitats must be different in terms of function, form and context.

These conceptual differences, however, are not to take away from the crucial value of habitat linkages in ecological conservation. The obvious function of corridors is to facilitate physical movement, which is

1. S. Varma et al., ‘Elephant Corridors in Kameng Elephant Reserve’ in Surendra Varma, Prabal Sarkar and Vivek Menon (eds.), 58 *Ecology and Conservation of Asian Elephants in Kameng Elephant Reserve, Arunachal Pradesh* (Wildlife Trust of India, New Delhi, 2008).

2. M. Gordon, R.T.T. Forman, *Landscape Ecology* (John Wiley and Sons: New York, 1986) 23.

3. A. Venkataraman, ‘What is an Asian Elephant (*Elephas Maximus*) Corridor?’ in V. Menon S. Kumar Tiwari, P. S. Easa and R. Sukumar (eds), *Right of Passage: Elephant Corridors of India* (Wildlife Trust of India, New Delhi, 2005).

4. *Ibid.* at 31.

crucial to the long-term viability of animal population: feeding/foraging, seasonal migrations as well as permanent movements in case of habitats being rendered unfit (due to climate change or other anthropogenic factors) are facilitated by, and occur through, corridors.

Habitat connectivity is essential for biodiversity – the insularisation of populations is largely inimical to their biodiversity and participation in natural evolutionary processes. Smaller population sizes have been scientifically proven to be more vulnerable to extinction – owing to environmental, demographic and genetic stochasticity.⁵ It is also a proven scientific fact that inbred populations show reduced ability to survive and reproduce ('biological fitness').⁶ In the context of today's world, where habitat fragmentation has become an increasingly common happenstance, corridors have a crucial role in sustaining wildlife populations through reducing the impact of habitat isolations.

Ecological dynamics

In order to embark on this discussion, it is important to first understand 'source' and 'sink' populations. 'Source' populations are those localised populations where the birth rate exceeds the death rate, and are a source of perpetuity of the species/sub-species. 'Sinks' are populations where deaths exceed births, and depend on an influx of individuals for their sustenance.⁷ These terms are usually used in the context of single-species conservation in spatially fragmented habitats. Typically, sink populations occur in areas adjoining human habitats and are usually marginalised as a result of this. Linkages such as corridors, then, must logically play a crucial role in sustenance of sink populations. It has, in fact, been theoretically proven that active dispersal from source populations can maintain 'evolutionarily stable sink populations'.⁸

Fragmented sub-populations of single species, known as 'regional populations', interact through linkages (such as corridors) to supplement the 'meta population' gene pool.⁹ The success of this mechanism is premised on the inviolate nature of the source populations, and therefore the protection of source habitats is a *sine qua non* for the efficacy of corridors in ecological conservation. There is, therefore, a cyclical causative nexus between the scientific management of protected areas and the positive effects of corridors in promoting biodiversity and sustenance of meta populations. Add to this the omnipresent variable of human–wildlife conflict and it becomes apparent how delicate and complex the exercise of corridor delineation and management actually is.

Minimum viable habitats and conservation strategies

The concept of a 'minimum viable habitat' area necessary for the survival of a species is now logically more appealing, in view of the preceding discussion. As a rule for most species, a minimum contiguous area is desirable for their long-term viability, for the various reasons already stated above. It is also intuitive knowledge that owing to increased anthropogenic pressures on existing regional populations, source populations now occur largely in core zones of protected areas. It therefore logically follows that corridors would be at their most effective when linking protected areas and increasing the continuity of source population habitats. Habitat conservation and management strategies are usually characterised by advocacy and study

5. R. Sukumar, *The Asian Elephant: Ecology and Management* (Cambridge University Press: Cambridge, 1989) 202–203.

6. B. Charlesworth S. Dolgin, S. E. Baird and A.D. Cutter 'Inbreeding and Outbreeding Depression in *Cenorhabditis Nematodes*' (2007) 61(6) *Evolution* 1339–1352.

7. H.R. Pulliam, 'Sources, Sinks and Population Regulation' (1988) 132(5) *The American Naturalist* 652.

8. See Charlesworth et al., above n. 6 at 652–661.

9. Ministry of Environment and Forests, *National Tiger Conservation Authority (Normative Standards for Tourism Activities and Project Tiger) Guidelines*, 2012 at 70–71.

in the area of land-use planning around protected areas (especially in identified wildlife corridors). Studies into the impact of land-use patterns (mainly urbanisation and agriculture) on biodiversity and genetic flow have been carried out, and it has been found (for one species of wood mouse) that genetic flow and diversity are greater across arable lands than urban spaces.¹⁰ A study in the urban context¹¹ also concluded a positive association of higher diversity with larger patch sizes – which suggested that corridors are optimal tools for biodiversity conservation even in urban spaces.

The importance of corridors in climatological terms also merits mention. The ability of species to adapt to climate change is dependent upon both their genetic resilience, as well as the accessibility of alternate habitats. The cumulative impacts of climate change (such as the impact of altered seasonal patterns in already fragmented/changed habitats) can even create a higher degree of stochasticity, or vulnerability, in ecosystems.¹² The argument for the role of corridors in augmenting both genetic resilience, as well as increasing habitat contiguity through their linkage function (across climatic gradients) has already been set out above. Thus, while the universal efficacy and optimal design of wildlife corridors is yet to be empirically proven and discovered; the fact of their role in biodiversity conservation cannot, in view of the preceding discussion and present-day contexts, be underscored enough. With this conclusion, and the fact that the protection of corridors through the limitation of land-use changes around protected areas requires a favourable legal framework, the legal status and protection accorded to corridors becomes the next logical focal point of discussion.

Part II: Legal frameworks for corridor protection and management – A comparative perspective

International law

Generally, international law instruments (multilateral treaties and conventions) are examples of soft law – which essentially means that they do not provide for sanctions on contracting parties for failing to adhere to, or achieve, the terms of the instrument(s). Further, none of the major international instruments relevant to biodiversity conservation – the Convention on Biological Diversity, 1992 ('CBD'); the Convention on Wetlands of International Importance, 1971 ('Ramsar Convention'); the Convention on the Conservation of Migratory Species, 1979 ('Bonn Convention') or the World Heritage Convention, 1972 – expressly refer to wildlife corridors. This is not a huge failing, since legal provisions have the ability to be sufficiently enabling without referring to the exact term – Article 8(a) of the CBD, for example, exhorts the development of 'a system of protected areas', and 8(d) the 'protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings'. Article 10 of the European Council Directive 92/43/EEC ('the Habitats Directive') also provides for the conservation of corridors without actually referring to the term. These measures include, by necessary implication, the development and conservation of corridors, in signatory countries where habitats have become fragmented as a result of anthropogenic pressures (which is true for almost every country today).

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10. A. Wilson, B. Fenton, G. Malloch, B. Boag, S. Hubbard, and G. Begg, 'Urbanisation versus Agriculture: a comparison of local genetic diversity and gene flow between wood mouse *Apodemus sylvaticus* populations in human-modified landscapes' (2016) 39(1) *Ecography* 87–97.
 11. J. Beninde, M. Veith and A. Hochkirch 'Biodiversity in Cities needs Space: A Meta-analysis of Factors Determining Intra-urban Biodiversity Variation' (2015) 18(6) *Ecology Letters* 581–592.
 12. K.L. Masters and P.A. Townsend, 'Lattice-work Corridors for Climate Change: A Conceptual Framework for Biodiversity Conservation and Social-ecological Resilience in a Tropical Elevational Gradient' (2015) 20(2) *Ecology and Society* 1.

What is a greater concern with legal frameworks for habitat conservation, not only of an international legal character but even in domestic legal regimes (as shall be discussed in the sections to follow) is the ability of law (by its nature, a static fact) to keep up with, or be adaptable towards, fast-changing environmental contexts – due to, among other anthropogenic factors, climate change. It may be justifiable in the contexts of most of the international instruments mentioned previously, since they were (except the CBD) signed at a time when climate change was not so conspicuous a part of the mainstream policy discourse.¹³ In spite of this, the Ramsar Convention hints at some elbow room for dynamism in managing protected areas designated under it ('Ramsar wetlands') by requiring states to inform the Secretariat if 'the ecological character of any wetland included in its territory and included in the List has changed, is changing, or likely to change as the result of technological developments, pollution or other human interference.'¹⁴ Even in the other conventions, subsequent Conferences of Parties ('CoPs') have reached agreements and decisions in response to contemporaneous issues. The 7th CoP of the CBD held in 2004, for example, adopted a programme of work on protected areas. In furtherance of this, it established an Ad-Hoc Open-Ended Working Group on Protected Areas, whose mandate includes, *inter alia*, contributing to the further development, management, monitoring and evaluation of national and regional systems of protected areas, including ecological corridors.¹⁵ In the face of these positive developments, it is a rude reminder of the soft nature of such international law instruments that India, even as a signatory of the CBD, has still not accorded formal legal recognition to ecological corridors.

In spite of all this, there have been efforts to incorporate the conservation of habitat linkages in jurisdictions, which merit critical examination. The common law jurisdiction of the United States and the civil law regime of Europe have been selected for this comparative review – seeing as how the system in India (originally a common law jurisdiction) has evolved today into a synthesis of the two with codified legislation as the primary source of law, supplemented with judicial interpretations and pronouncements.

European law

The Bern Convention on the Conservation of European Wildlife and Natural Habitats, 1979 ('Bern Convention') obliges its parties to take all measures necessary for the conservation of the natural habitats of wild flora and fauna species. It is, on a reading, more mandatory in its prescriptions than the CBD, by specifically imposing the obligation to take 'necessary legal and administrative measures' in furtherance of its objectives.¹⁶ It is theoretically more effective in its working inasmuch as it, unlike most other international conventions, provides for a comprehensive monitoring and implementation system to periodically assess compliance as well as the effectiveness of the Bern Convention. This system incorporates:

Compulsory biennial reports submitted by parties on the use of the exceptions allowed under Article 9;
Voluntary general reports submitted by parties on the status of implementation (every four years);
Legal reports analysing the implementation of the Bern Convention country-wise, commissioned by the Secretariat;

13. A. Cliquet, 'International and European Law on Protected Areas and Climate Change: Need for Adaptation or Implementation?' (2014) 54(1) *Environmental Management* 721.

14. See Article 3(2) of the Ramsar Convention. Available at: www.ramsar.org/sites/default/files/documents/library/current_convention_text_e.pdf (Last accessed 22 January 2016).

15. Decision VII/28 of the Conference of the Parties, Convention on Biological Diversity (Kuala Lumpur, 2004) at para. 25. Available at: www.cbd.int/convention/wgpa.shtml (Last accessed 22 January 2016).

16. Articles 4–7 of the Bern Convention. Available at: www.persona.uk.com/a21Ton/Core_dox/J/J2.pdf (Last accessed 22 January 2016).

- National reports submitted to and analysed by the Group of Experts regarding their target species/habitats; and
- Reports submitted by parties and observers on the follow-up of Recommendations made by the Standing Committee under Article 14.

Even on the point of climate change adaptability, various Standing Committee recommendations within the framework of the Bern Convention have stressed on the establishment and preservation of sufficient connectivity between protected areas for various species.¹⁷

Besides the Bern Convention, the European Council also adopted two directives relevant in this regard – commonly known as the Birds¹⁸ and Habitats¹⁹ Directives. These have a greater legal force than the international conventions discussed above, derived from Article 288 of the Treaty for the functioning of the European Union ('the EU Treaty'), which states that a directive 'shall be binding, as to the result to be achieved, upon each Member State to which it is addressed, but shall leave to the national authorities the choice of form and methods'. If the Member State fails to adequately comply with the directive, the European Court of Justice ('ECJ') has the jurisdiction (under Article 260 of the EU Treaty) to direct the Member State to comply, or even impose a lump-sum penalty in case of failure to nationally transpose directive obligations.

Another positive feature of the two EU directives is the elucidation of *qualitative* goals, as against the mere prescription of conservative or restorative procedures. For example, the Birds Directive requires the maintenance of populations at levels that correspond to 'ecological, scientific and cultural requirements' (Article 2). The Habitats Directive, too, enjoins its Member States to maintain or restore natural habitats and species at a 'favourable conservation status' (Article 2). According to the definition, the conservation status of a natural habitat will be considered as favourable when 'its natural range and the areas it covers within that range are stable or increasing, when the specific structure and functions which are necessary for its long-term exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable [which is defined separately]'. These provide one solution, in theory, for the problem of static conservation laws in rapidly changing ecological contexts. It is, however, also noteworthy that as per the European Commission's own data, only 17 per cent of habitats and species covered by the Habitats Directive are at a 'favourable conservation status'.²⁰

It is also worthwhile to note that Article 10 of the Habitats Directive – perhaps most relevant to this discussion – mentions landscape features, which are 'essential for the migration, dispersal and genetic exchange of wild species' (clearly referring to corridors). The mandate in this provision is couched in extremely soft language, however – it enjoins Member States to 'endeavour, where they consider it necessary' to 'encourage the management' of such landscape elements. Harking back to the discussion in the first part of this article, this provision seems to view corridors as temporary use habitat connectors, rather than permanent habitat range elements. This approach is indicative of the delicacy with which corridor conservation is approached, not only in Europe, but elsewhere in the world as well – as is subsequently discussed.

17. See Bern Convention Standing Committee Recommendations No. 135 of 2008; 143 of 2009 and 159 of 2012.

18. European Council Directive 2009/147/EC, originally adopted in 1979 and amended in 2009.

19. See discussion at para. 2, page 6 *supra*.

20. European Commission, *Composite Report on the Conservation Status of Habitat Types and Species as required under Article 17 of the Habitats Directive* 7-9 (EEC, 2009). Available at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009DC0358&from=EN>. (Last accessed 23 January 2016).

American law

Examining the legal frameworks for corridor protection and habitat connectivity in national contexts will lend a better perspective to the interplay of politics and economics that are reflected in legal conservational outcomes. In the United States, federal statutes such as the Endangered Species Act ('ESA'), the Migratory Bird Treaty Act ('MBTA') and the Marine Mammal Protection Act ('MMPA') all exist for the protection of migratory species and thus also corridors, but they have their limitations. The ESA, for one, is largely reactive and does not provide any real protection to species or habitats until, as is evident, they are endangered. The MBTA and MMPA, as is also apparent from their titles, exist for the benefit of specific animals – there is a lack of an integrated framework for the conservation of migratory species and corridors. There are also significant jurisdictional complexities in determination of land-use policies: the Bureau of Land Management, the Forest Service, the Fish and Wildlife Service and the National Park Service are the major land management agencies of the American state²¹ – coordination between which is integral for effective corridor designation and management. Moreover, the legislations do not aim to preserve corridors for their functional benefits, but do so incidentally and in a limited manner by looking to protect the minimum viable populations of certain species²² (and do not aim for a net gain in either habitat areas or meta-populations).

Even apart from the above limitations in the text of the law and policies, the successful policy interventions to conserve corridors in the US have been highly qualified for other reasons as well. Recently, a pronghorn migratory corridor in the western US was accorded protected status in the forest's management plan.²³ This policy success was only possible in the small area where the threat to the corridor was almost absent even prior to the change. The economic and social interests at play (or 'the stakeholders' rights argument') in the rest of the relevant landscape did not allow for a substantial change in the land-use pattern that was required for the protection of this corridor ('the ecological argument'). This partial success was achieved through the unconnected pursuits of two separate strategies, through two separate groups of stakeholders, for whom the conservation question was framed in different terms – an important lesson.

Indian law

India is a signatory to all the international conventions mentioned in the beginning of this Part, and consequent to its ratification has enacted legislation in furtherance of the objectives of biodiversity and habitat conservation common to them. The Wild Life (Protection) Act, 1972 ('WLPA') is the major statute in this regard. It provides for the notification and management of protected areas such as sanctuaries, tiger reserves and national parks – but fails to address habitat connectivity in a concrete way.²⁴

This is not to say that there is a total paucity of legal solutions for corridor protection, if the problem is phrased as one of management of land-use patterns around protected areas ('PAs'). The National Tiger Conservation Authority (under the Ministry of Environment and Forests) in 2012 issued guidelines for tourism in and management of tiger reserves in India (in response to a Supreme Court direction).²⁵ These guidelines are the only Indian legal instrument which specifically allude to the criticality of corridors in

21. V.J. Meretsky, J. W. Atwell and J. B. Hyman 'Migration and Conservation: Frameworks, Gaps and Synergies in Science, Law and Management' (2011) 41(1) *Environmental Law* 495.

22. *Ibid.* at 473.

23. D.N. Cherney, 'Securing the Free Movement of Wildlife: Lessons from the American West's Longest Land Mammal Migration' (2011) 41(2) *Environmental Law* 609–610.

24. While the provision for conservation reserves (s. 36A) intends to preserve, *inter alia*, '... those areas which link one protected area with another ...', this has not been utilised in the way, or to the extent, that was perhaps envisioned.

25. *Supra* n. 9, at 70–71.

conservation efforts. While guidelines form a part of what are commonly referred to as ‘delegated legislation’ in India, and lack in-built sanctions for default (unlike statutes), those with their roots in a statute have been held to be enforceable without exception.²⁶ Even non-statutory guidelines have been clothed with enforceability by the Supreme Court of India, if they have created a legitimate expectation from the issuing authority, or even if departing from them undermines the public purpose which they are intended to serve.²⁷ In essence, these guidelines ensure there is not a complete absence of enforceable legal provisions for corridor conservation in India.

Besides this, a number of other statutory tools are also available for conserving connective landscape elements like corridors, depending upon the context:

The expansion of buffer zones of protected areas (beyond the existing boundaries, and not at the expense of the core protection zone) is a possible solution, but the alteration of boundaries for sanctuaries²⁸ and national parks²⁹ is a high-cost, low-return strategy, requiring the recommendation of the National Board for Wild Life (‘NBWL’). Practically, the expansion of boundaries of PAs is virtually impossible, given the anthropogenic pressures on the periphery of buffer zones and beyond – making the move a politically unviable one.

Restraining the change in land-use patterns around PAs through notification of community reserves³⁰ (for private lands), which requires the prior alignment of local community goals with conservation objectives.

Providing for an additional (albeit lower) degree of protection in areas around PAs in the form of conservation reserves,³¹ eco-sensitive zones,³² or as reserved forests.³³ These are practically still vulnerable to change in land-use, especially for infrastructure or defence projects.

It is clear that the legal framework available for protection of corridors in India is still nascent – to say nothing about the adaptability of this framework. Still, the picture isn’t completely bleak – the preceding discussions showed that there are extant legally enforceable provisions for corridor conservation. There have also been favourable judicial and executive interventions in this area, which shall be discussed in more detail in the following part – along with the challenges that are invariably faced.

Part III: Corridors in India – Impediments and developments

Impediments to conservation

Wildlife corridors are threatened by various social, economic and anthropogenic factors. India’s growing population of more than a billion puts tremendous pressure on its natural spaces. Growing need for land, infrastructure and energy requirements of such a large population have slowly pushed the natural spaces into

26. *Knittex Overseas Pvt Ltd v State Bank of Patiala and Ors.* AIR 2008 P&H 59; *Raheja Hospital and Psychiatric Research Institute v. Lt Governor of Delhi and Ors* 121 (2005) DLT 193; *Damayanti Verma (Deceased) v Life Insurance Corporation of India and Anr.* Writ Petition (Civil) No. 4342/2007. Available at <http://delhicourts.nic.in/JULY11/Damayanti%20Verma%20Vs.LIC.pdf> (last accessed 4 July 2016).

27. *Narendra Kumar Maheshwari v Union of India* AIR 1989 SC 2138.

28. Section 26A(3) of the WLP.

29. *Ibid.* s. 35(6).

30. *Ibid.* s. 36C.

31. *Ibid.* s. 36A.

32. Ministry of Environment and Forests, *Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wild Life Sanctuaries* (MoEF, New Delhi, 2011).

33. Sections 3–20 of the Indian Forest Act, 1927.

silos of PAs. Most PAs are surrounded by human habitation, agriculture, mining and, roads and railways cutting across wildlife corridors that connect these source areas to one another. However, the long-term survival of species depends on maintaining viable habitats and connecting corridors which ensures variation in gene pool, and avoids risks associated with habitat fragmentation and isolation of species. Further, for ensuring viable habitats it is essential to maintain large, contiguous landscapes.

For a developing country like India, most PAs are connected by patches of forests, grasslands or agricultural land in most areas. However, socio-economic pressures have led to fast-depleting corridor spaces. The biggest concern for corridor management is the growing linear infrastructure network in the country. Linear infrastructure projects – roads, trains and power lines, make deep intrusions into forests over thousands of kilometres across the country, causing widespread fragmentation of forests, land degradation and erosion in mountains, and wildlife casualties through road kills, electrocution and train accidents. Worldwide, a new field of applied research is developing on ‘road ecology’³⁴ which aims to quantify the ecological impact of roads and study the mitigation measures needed to lower the risk to individuals, communities and ecosystems.

The situation is further exacerbated by the central government’s policies: the Union Ministry of Environment, Forests and Climate Change has even eased the clearance process for linear infrastructure to begin work as soon as the project receives approval in principle from local authorities.³⁵ Some of the prominent examples of linear infrastructure cutting across PAs and critical corridors are NH 72 and 74 crossing Rajaji National Park, NH 6 and 7 crossing through the biodiversity-rich central India landscape intersecting six tiger corridors in the Vidarbha region of Maharashtra,³⁶ NH 37 through Kaziranga National Park, and NH 54 through Borail Wildlife Sanctuary in Assam among many others. National and state highways intersect and traverse through almost 26 of the 42 PAs declared as tiger reserves in the country.³⁷ Mining and irrigation projects pose another major threat to corridors. Tadoba Tiger Reserve is connected to other habitats in Andhra Pradesh in the South, Gadchiroli in the East and Nagpur in the North through three major corridors. Irrigation and mining projects in the area have led to widespread fragmentation and discontinuous migratory routes for tigers. An irrigation canal cutting across Brahmapuri forest division adjoining the tiger reserve and recent clearances³⁸ to mining projects in Chandrapur on the fringes of Tadoba have already led to the cutting off of critical corridors in the area; future development in the area will only lead to isolation of the reserve. Apart from linear infrastructure and mining and irrigation projects, increasing population is leading to illegal encroachments across the PA network. PAs like Kaziranga National Park have faced widespread destruction due to illegal encroachments in and around the National Park cutting off major migratory routes of elephants. The *Numaligarh Refinery* case in Kaziranga³⁹ where four elephants died trying to cross an illegal wall construction depicts the sad state of corridor management in the country. If the country’s corridor network is to be protected, it is essential to integrate corridor management into the environmental law framework. The case studies discussed hereinafter portray the various issues with corridor management in critical landscapes. An attempt has been made to devise legal measures that can help in providing legal protection to critical corridors in these areas.

34. See generally R. van der Ree, D. Smith et al., *The Handbook of Road Ecology* (Wiley Blackwell: Hoboken, 2015).

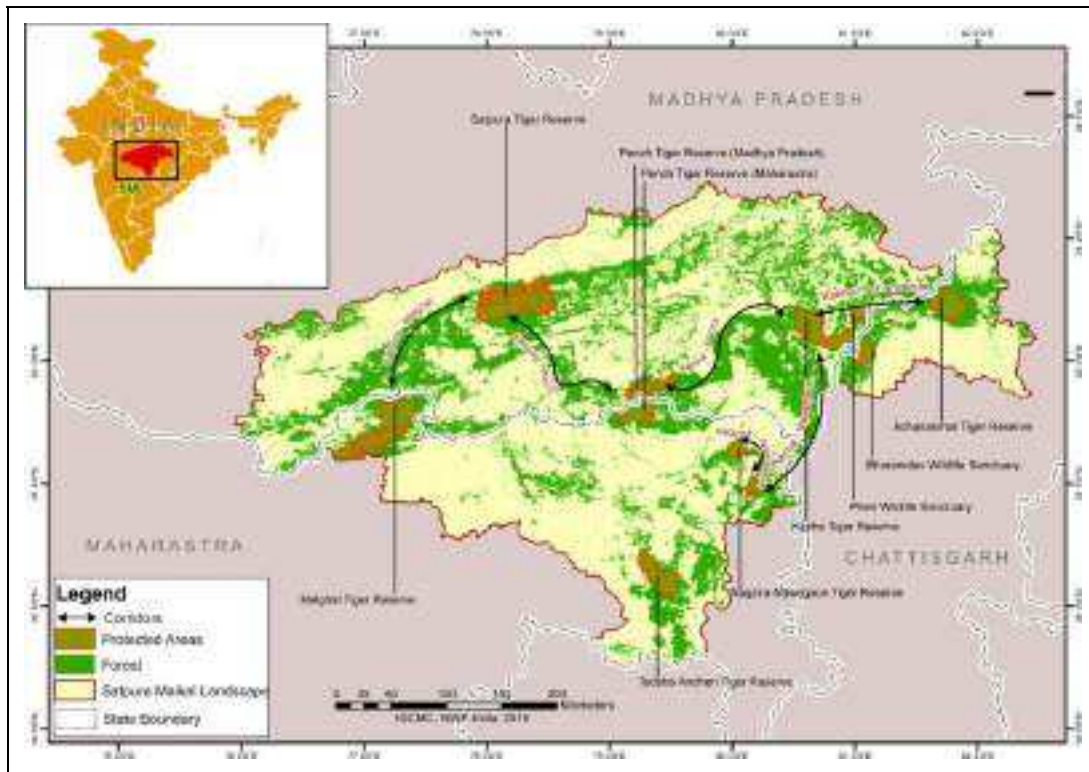
35. D.K. Dash ‘Javadekar eases green norms for linear projects’ *The Times of India* 1 January 2015.

36. A. Saxena, B. Habib et al., ‘Proposed mitigation measures for habitat contiguity and reducing wild animal mortality on NH 6 & 7 in the central India landscape’ *Technical Report* (WII and NTCA, New Delhi, 2015).

37. See A. Rajvanshi et al., *Roads, Sensitive Habitats and Wildlife Environmental Guidelines for India and South Asia* (WII and CEC Ltd., New Delhi, 2001).

38. N.M. Ghanekar, ‘Maharashtra: Tadoba Tiger Reserve faces coal mine threat’ *DNA India*, August 30, 2015.

39. *Rohit Choudhury v. Union of India*: M.A. No. 787 of 2015 in Application No. 38 of 2011 before the National Green Tribunal.



Note: The corridor indicated is notional and not to scale, but is based on field observations of animal movements in the region.

Kanha-Pench corridor in the Satpuda Maikal Landscape

Central India holds a large percentage of the tiger population and the Satpuda Maikal Landscape ('SML') is a global priority landscape for tiger conservation. Nonetheless, the area is rife with development, infrastructure and mining projects leading to widespread habitat fragmentation. The SML map below depicts the fragmented PAs across the landscape with important corridors identified by WWF-India. The Kanha-Pench ('K-P') corridor is clearly identifiable as the thin green patch connecting the two tiger reserves.

The Kanha-Pench (K-P) corridor complex harbours around 120 tigers creating a healthy meta-population of tigers in central India, along with other critical flora and fauna. The landscape also supports diverse land use, forest protection regimes and traditional forest-dwelling tribal communities.⁴⁰ The single corridor is spread over a large area and functions as a network falling under several forest division jurisdictions, with numerous pockets of permanent human settlements. There are approximately 440 villages⁴¹ in the corridor complex between Kanha and Pench and the numbers seem to keep increasing. However, human-wildlife conflict is not the biggest threat in the region. Linear

40. See generally J. Jena et al., 'Lifeline for Tigers: Status and Conservation of the Kanha-Pench Corridor' (WWF India, New Delhi, 2014).

41. Ibid. at 9.

infrastructure development in the last decade has become a major threat to the corridor. National Highway-7 (NH 7) is a major barrier for animal movement in the corridor. Numerous road-kill accidents have been documented in the area, but development demands in the region are high and at present the MoEF and the National Highways Authority of India ('NHAI') are in the process of widening the highway to four lanes. The project is in the middle of a litigation tussle with the National Green Tribunal ('NGT'), the Supreme Court and the Maharashtra High Court passing contradictory orders. Conservationists feel that an alternative route on NH 69 could be used to avoid the widespread damage the expansion of NH 7 could have on the ecology of the area.⁴² However, the government has cleared the project and the expansion work is underway. The NGT had ordered a stay on tree felling and all construction work, but the work continued under orders from the Maharashtra High Court. While the tussle still continues, the Supreme Court has recently ordered the petitioners to present mitigation measures to the Maharashtra High Court. A report by the Wildlife Institute of India ('WII') suggested mitigation measures for the project costing the NHAI an extra \$215,000 which the NHAI incorporated into the project plan. The mitigation measures suggest the building of flyovers and underpasses for ease of passage for wildlife. Despite these measures, the project will greatly disrupt the ecology of the area and it remains to be seen how well a system of underpasses made popular by the United States, (in states like Montana, for example, where the wildlife crossing structures on Highway 93⁴³ have been largely successful in protecting wildlife from road accidents) will fare in the Indian context.⁴⁴ Given the topographical and vegetational differences between the two countries, however, transposing this concept directly may not be advisable. Adaptive structures, such as the canopy bridge serving lion-tailed macaques in Tamil Nadu's Anamalai Tiger Reserve⁴⁵ are perhaps a more effective solution in this regard.

Another threat to the K-P corridor is the proposed broadening of a narrow-gauge railway track from Nainpur to Balaghat; this will severely impact the corridor. The length of the track is 74.9 km, of which 17.9kms run through the K-P corridor.⁴⁶ The line cuts the corridor into two halves at the Nainpur and Pandiyachapara sections, two critical linkages.⁴⁷ The conversion of the railway track to broad gauge would allow for a considerable increase in speed of the train, which was limited to approximately 40 kmph due to the narrow gauge line. Having been rejected once, the project was cleared by the Forest Advisory Committee ('FAC') with certain conditions and mitigation strategies. The FAC directed WII to formulate a mitigation strategy, approved by the NTCA, before Stage II clearance. The project is awaiting Stage II clearance at present; conservationists feel is now only a procedural delay.

The functional status of various corridors within central India is rapidly declining with increased threats of development projects, linear infrastructure and the changing socio-economic status of the communities living within and around the corridors. It therefore becomes imperative that the

42. N. Sinha 'Saving tigers caught in the headlights' *The Hindu*, 9 April 2015.

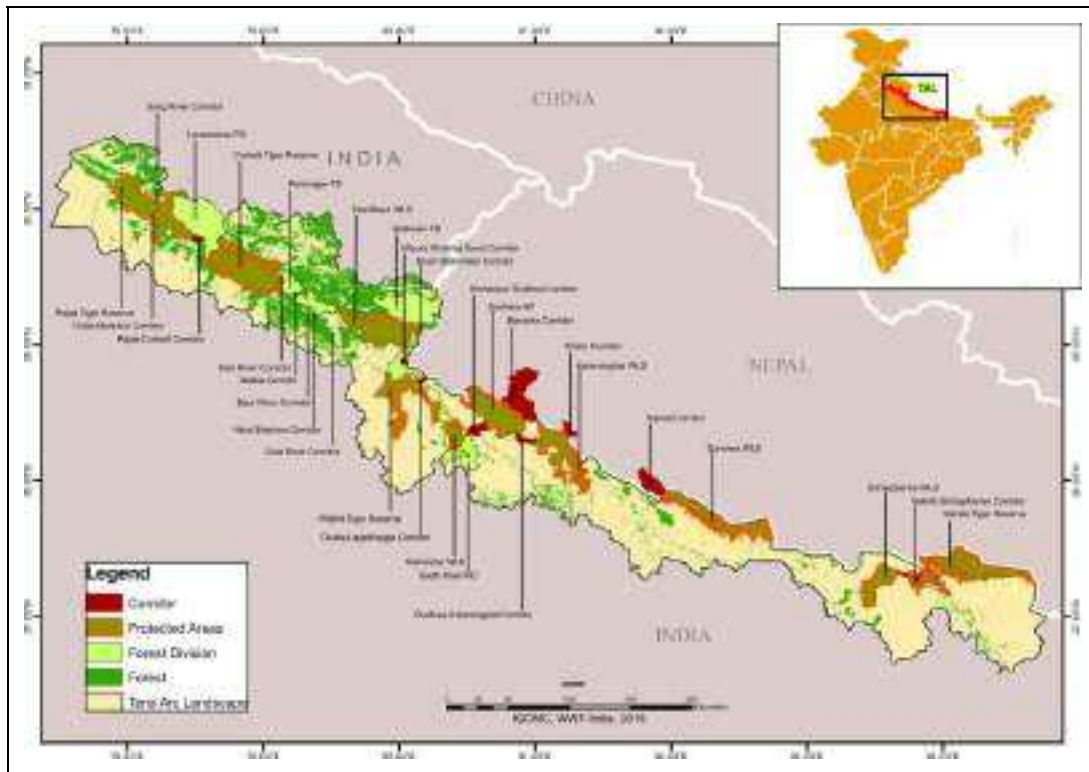
43. See Hardy, A.R., J.Fuller, et al. 'Evaluation of Wildlife Crossing Structures and Fencing on US Highway 93 Evaro to Polson Phase I: Preconstruction Data Collection and Finalization of Evaluation Plan' *Final Report* (2006). Available at: www.mdt.mt.gov/other/webdata/external/research/docs/research_proj/wildlife_crossing/final_report.pdf (Last accessed 6 July 2016).

44. J.P. Purdum, (2013) *Acceptance of Wildlife Crossing Structures on US Highway 93 Missoula, Montana* (Master's thesis), Retrieved from University of Montana ScholarWorks (Paper no. 47), available at <http://scholarworks.umt.edu/cgi/viewcontent.cgi?article=1066&context=etd> (Last accessed on 7 July 2016).

45. G. Raghunathan, 'Bridging the Gap' *Conservation India*, 12 November 2012. Available at: www.conservationindia.org/gallery/bridging-the-gap (last accessed 7 July 2016).

46. See J. Vattakaven, *Fragmentation Threat in the Kanha-Pench Corridor: Implications of the Gondia-Jabalpur Railway Line on Corridor Connectivity and Tiger Dispersal* (WWF India, New Delhi, 2010).

47. Ibid. at 9.



Note: The corridor indicated is notional and not to scale, but is based on field observations of animal movements in the region.

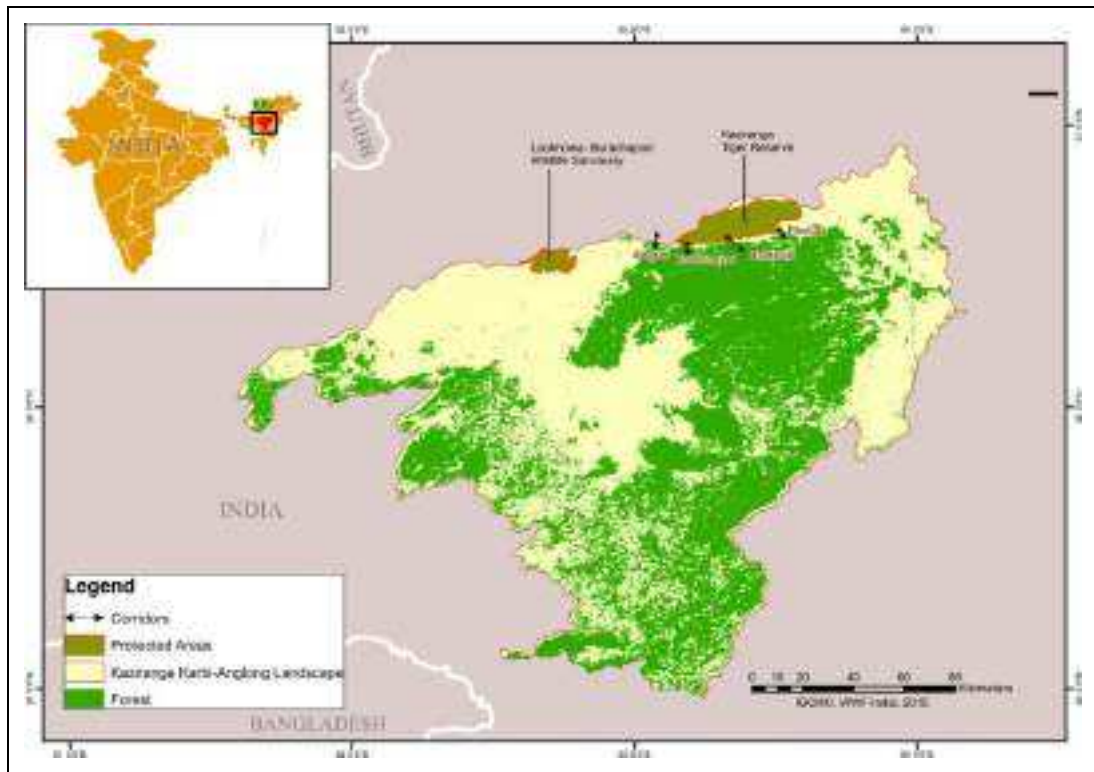
status of critical corridors like K-P are maintained and legally safeguarded by bringing them under a uniform regime.

Kilpura Khatima Surai Corridor in the Terai Arc Landscape

The Terai Arc Landscape ('TAL') spreads across 810 km of the Indian states of Uttarakhand, Uttar Pradesh and Bihar, and the low-lying hills of Nepal. The landscape boasts of some of India's most well-known Tiger Reserves and Protected Areas such as Corbett Tiger Reserve, Rajaji National Park, Dudhwa Tiger Reserve, Valmiki Tiger Reserve and Nepal's Bardia Wildlife Sanctuary, Chitwan National Park, and Sukhla Phanta Wildlife Sanctuary. In total, the landscape has 13 Protected Areas, nine in India and four in Nepal, covering a total area of 49,500 sq. km: 30,000 sq. km lies in India.⁴⁸

The image below (Source: WWF India) shows the PAs in the landscape and the various corridors that connect the source areas. The Kilpura Khatima Surai ('KKS') is a critical corridor that connects Corbett National Park to other source areas. It is the only tiger corridor that connects Uttarakhand and Uttar Pradesh and the last remaining connectivity between the tiger populations of lower Himalayas and Terai. Apart from being a priority tiger corridor, KKS is also among the 'Priority II Elephant corridors'

48. See www.wwfindia.org/about_wwf/critical_regions/terai_arc_landscape/about_terai_arc_landscape/ (Last accessed 23 January 2016).



Note: The corridor indicated is notional and not to scale, but is based on field observations of animal movements in the region.

identified by the Elephant Task Force of the Ministry of Environment, Forests and Climate Change ('MoEF').⁴⁹ In the last century, the region has seen rapid transformation from dense wilderness and malarian forests,⁵⁰ to a largely agrarian area with a densely populated landscape dominated by fields of wheat, rice and sugarcane, interspersed with roads and railway networks. Today less than two per cent of the contiguous natural habitat remains protected as PAs.⁵¹ One of the most pressing concerns in the area is the widening of National Highway ('NH') 125 which passes through the wildlife corridor. Recently, the Uttarakhand forest department approved the widening of NH 125 based on the 'Project Summary' which wrongfully stated that the road does not pass through any National Park/Sanctuary/Wildlife corridor/Eco-sensitive zone. These kinds of incidents are not uncommon and linear infrastructure across PAs and corridors has been prioritised as indispensable to development. As the needs of a growing economy increase, protection of wildlife corridors now rests on mitigation measures like over and under passes to ease the movement of wildlife.

49. M. Rangarajan et al., 'Gajah: The report of the Elephant Task force' (Ministry of Environment and Forests, New Delhi, 2010). Available at: www.moef.nic.in/downloads/public-information/ETF_REPORT_FINAL.pdf (Last accessed 23 January 2016).

50. R. Tilson, P.J. Nyhus (eds), *Tigers of the World: The Science, Politics and Conservation of Panthera tigris* (Academic Press: Cambridge, 2010) 164–167

51. Ibid.

Kaziranga–Karbi Anglong Landscape

The Kaziranga–Karbi Anglong Landscape (KKL) in the central part of Assam is an area where the Kaziranga National Park (KNP), a world heritage site and home to two-thirds of the world's population of the one horned rhino, is known to be contiguous with the now partially disjointed Karbi Anglong (KA) hills forming a critical corridor network. Kaziranga National Park, the biggest PA in this landscape is connected with the rest of the landscape through four corridors, namely Panbari, Haldhibari, Amguri and Kanchanjhuri, which are facing various developmental and anthropogenic pressures.⁵² NH 37, which divides the low-lying areas of Kaziranga and the hills of Karbi Anglong is one of the primary concerns in KKL. Assam receives a lot of rainfall during the monsoons, and each year KNP is flooded forcing wildlife to take refuge in the Karbi Anglong Hills southwards, which is across the highway (see the KKL map above). A number of animals are killed on the road each year due to speeding traffic. The matter has been in litigation since 2012 when petitioner Rohit Choudhary⁵³ challenged the widening of a stretch of the highway. The Highway was supposed to be de-notified as a highway and moved away from KNP, as one of the conditions under the environmental clearance granted to Numaligarh Refinery Limited in 1991. The condition stipulated that the work on the diversion of the highway should start before construction of the refinery begins and that it should be completed before the commissioning of the refinery project. However, the refinery started functioning in defiance of the conditions. At present, the NGT has passed several orders directing the state government and the forest department to put in place short-term mitigation measures to reduce the number of road kills and accidents.

Recently, the Numaligarh refinery came under fire again for illegal construction within the no-development zone of the national park obstructing a key elephant migratory route through the Deopahar forest area.⁵⁴ The NGT has stayed construction of the wall, calling the forest clearance an 'abuse of law'.⁵⁵ The NGT has, in fact, taken a keen interest in the case and pulled up park authorities and government authorities against the sheer expanse of illegal development around the National Park. The corridors within the KKL Landscape are threatened by a multitude of problems ranging from the speeding traffic on NH 37, the expansion of unplanned settlements, manual stone quarries in the hill slopes of Bagori, agricultural practices, to the mushrooming of hotels and resorts around the corridors in the last few years. This, in addition to the threat of poaching and illegal wildlife trade in the area, will have a long-lasting impact on the last remaining patch of rich biodiversity in Assam. While judicial intervention has led to a considerable decline in encroachments and illegal construction in the landscape, a faulty environment and forest clearance system needs to be evaluated by the state authorities. It is clear that unless corridors are protected under a legal regime, political, social and anthropogenic pressures will slowly lead to the disintegration of these integral ecological connectors.

Legal measures for corridor protection

On the basis of these case studies, it is clear that unless some form of legal protection is provided to corridors, it will become increasingly difficult to prevent development and other socio-economic factors from destroying corridor connectivity. However, there is no law which specifically defines or protects wildlife corridors, or prohibits development within, and around important corridors in India. However, wildlife corridors have been mentioned in certain environmental and wildlife laws and guidelines. Most of

52. See www.wwfindia.org/about_wwf/critical_regions/kaziranga_karbi_anglong/about_kaziranga_karbi_anglong/ (Last accessed 24 January 2016).

53. *Rohit Choudhury v Union of India and Ors*: Original Application No. 174 of 2013 before the National Green Tribunal.

54. U. Bhattacharya, 'How Development is Killing Assam's Endangered Elephants' *NDTV* 12 October 2015.

55. See Saxena et al. above n. 35.

these legal measures have hardly been used by the government to protect wildlife corridors and have remained largely dormant in the area of corridor protection and management.

Notification of eco-sensitive zones

An eco-sensitive zone is one which surrounds a protected area and acts as a 'shock absorber', with restricted commercial activity, to reduce pressure on the PAs. Considering most wildlife corridors are threatened by increased industrial activity and human habitation, it can be advantageous to use this provision for the declaration of a corridor as an ESZ.

The Ministry of Environment and Forests (MoEF) issued certain guidelines in 2011, to notify eco-sensitive zones in accordance with the Wildlife Conservation Strategy 2002, the National Wildlife Action Plan (2002), the National Board for Wildlife's letter dated 27 May 2005, and the Supreme Court's directions to states, to declare ESZs around protected areas.

According to these MoEF Guidelines, a corridor can be included in an eco-sensitive zone. Section 4.2 of the Guidelines states: 'In cases where sensitive corridors, connectivity, and ecologically important patches, crucial for landscape linkages, are even beyond 10 KM width, these should be included in the Eco-sensitive Zone.' As a primary step towards notifying ESZs, an inventory of the different land-use patterns and the different types of activities, types and number of industries operating around each of the PAs as well as important corridors is to be taken. This could be done by the appropriate Range officers, who can take stock of activities within 10 km of their range. Further, the process provides for the formation of a small committee comprising the appropriate wildlife warden, an ecologist, a local government official and an official of the local Revenue department; this can suggest the extent, requirement and management of the eco-sensitive zone.

It is pertinent to note that approximately 107 ESZ notifications have been announced by the MoEF on its website, and the ministry is in the process of finalising the proposals.⁵⁶ While the Guidelines clearly specify an area of up to 10KM to be demarcated as an eco-sensitive zone, a reading of the draft notifications indicates a trend contrary to the intention of creating an ESZ to conserve the forests, wildlife and environment. Just a bare reading of the draft notifications shows that most states have notified an average area of 100 meters to 4 Km as an ESZ. There are certain critical areas like Khangchendzonga National Park with a proposed ESZ of 200 meters, raising concerns for the other ecologically critical protected areas and corridors. At this point, it has become necessary to use the legal space for the protection of corridors in light of the recent developmental pressures.

Conservation reserves

Both conservation and community reserves are the result of gradual move towards inclusion of local communities in biodiversity conservation in India. Protected areas in India were based on a preservationist principle which has affected millions of people and their livelihoods over the last 40 years.⁵⁷ The recent inclusion of community and conservation reserves within the law was a result of a global push for community practices for biodiversity protection and a more inclusive system of governance. However, the law does not define how a CR is to be identified or chosen; probably for the reason that adequate freedom should be given to the local communities to determine the need for a CR (community or conservation). For example, Aghanashini Lion-tailed Macaque Conservation Reserve in Karnataka holds the largest

56. See www.moef.gov.in/content/esz-notifications (Last accessed 24 January 2016).

57. Kanagavel, A., R. Pandya, *et al.* 'Community and conservation reserves in southern India: status, challenges and opportunities.' (2013) 5(17) *Journal of Threatened Taxa* 5256–5265. Available at: <http://dx.doi.org/10.11609/JoTT.o3541.5256-65> (Last accessed 5 July 2016).

population of the ‘Endangered’ Lion-tailed Macaque *Macaca silenus*. A study conducted in 2012⁵⁸ found that the reserve was established for the protection of the species and threatened corridors in the area. In the beginning, the communities felt that declaring the area a conservation reserve would hamper their rights of resource use, but with the involvement of a local NGO and the forest department, the 299.52 km stretch was formally declared as a conservation reserve on 13 June 2011. It is managed in collaboration with the FD and gram panchayats without restricting resource use of the community.

Section 36A of the Wildlife Protection Act, 1972 states that: ‘The State Government may, after having consultations with the local communities, declare any area owned by the Government, particularly the areas adjacent to National Parks and sanctuaries and those areas which link one protected area with another, as a conservation reserve for protecting landscapes, seascapes, flora and fauna and their habitat.’

As of September 2015, there are 66 conservation reserves (CR) in the country.⁵⁹ Most seem to be areas in the buffer zones of PAs (like Darlaghat CR on the edge of the Darlaghat WS; Saraswati CR on the edge of the Saraswati WS), and even villages on the fringes of forest areas (such as Borgad in Maharashtra) have been declared as CRs. From the list, it can be seen that areas as small as 0.67 sq. km have been notified as CRs. Certain CRs – like Sudhmahadev in J&K (142 sq. km) and Afghanashini in Karnataka (299 sq. km) – are appreciably large areas. The average size of a conservation reserve in India is about 36 sq. km – which is by no means a negligible area. Conservation reserves evince a unique approach to protect threatened species, their habitats, and corridors, with minimal interference with the livelihoods of local communities – who have historically lived harmoniously with the ecology of the areas they inhabited. The specific provision under law enables a conservation reserve to be declared on any government land; this serves a conservation function of protecting habitat or connecting corridors, providing very wide potential for its use. Using this legal space as an instrument to protect corridors and ecologically sensitive areas, therefore, seems like a strategy worth pursuing – especially since many CRs (Borgad and Chharidhandh, to name two) have been notified following pressure and lobbying from conservation groups. The MoEF has proposed a draft policy for proposals affecting NPs and WLS,⁶⁰ where it has shown a proclivity towards declaration of areas around PAs as conservation reserves rather than denotifying them completely, in case of infrastructural or other proposals – and granting of additional areas in lieu to the PAs.

Community reserves

Section 36C of the Wildlife Protection Act, 1972 states: ‘The State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, sanctuary or a conservation reserve, as a community reserve, for protecting fauna, flora and traditional or cultural conservation values and practices.’

The WLPA also mandates that after the notification of the community reserve, ‘no change in the land use pattern shall be made within the community reserve, except in accordance with a resolution passed by the Management Committee and approval of the same by the State Government’.

Legally, the law is clear in its mandate to provide communities with the right to protect biodiversity; however the implementation of this provision has been difficult. While community-conserved areas (CCAs) have been successfully established in North-East Indian states for the protection of threatened species,⁶¹ there is hesitance on the part of communities, in proposing community reserves legally, mainly owing to

58. Ibid.

59. See http://wiienviis.nic.in/Database/cr_i_8229.aspx (Last accessed 24 January 2016).

60. See www.moef.nic.in/sites/default/files/np-sanc.pdf (Last accessed 24 January 2016).

61. PTI ‘Rare black-necked crane spotted in Arunachal valley’ *The Hindu* 6 January 2012. Available at: www.thehindu.com/sci-tech/energy-and-environment/rare-blacknecked-crane-spotted-in-arunachal-valley/article2780243.ece (Last accessed 4 July 2016).

restrictions on land use change and the fear of losing resource rights. The Kadalundi-Vallikunnu estuary located in Kozhikode (Calicut), and Malappuram districts of Kerala State was the first Community Reserve of India, declared in 2007. The estuary faced several threats from sand mining, waste disposal, coir retting, and infrastructure development. However, the local community was not convinced about the declaration of a community reserve in the area due to concerns about the prospective loss of their livelihoods. However, government and NGO efforts in the area helped to garner support for the cause and the reserve was established in 2007. A coir factory was also set up outside the mangrove area by the reserve management committee to compensate for any livelihood loss.⁶²

As most corridors are threatened with changing land patterns which promote commercial development, notification of community reserves can be used as an important legal measure to protect wildlife corridors. As of October 2015, there are only 26 community reserves in India:⁶³ 22 of these are in Meghalaya, two in Punjab, and one each in Kerala and Karnataka.

CRs provide the appropriate legal protection for corridors and habitats outside PAs but their implementation has not been satisfactory. Lack of trust in the government, resistance to legal designations, and the historical role of the forest department in control of forest resources, have all diluted the potential of these legal measures. It is important that the concerned communities and the forest department are involved in the process together and there is a good working relationship between the two. For example, the forest department should involve local communities in capacity-building exercises and train them in forest management. The local communities should be provided with the opportunity to participate in forest management, and assured of their rights in the forest. It would also be beneficial for local NGOs to bridge the gap between the forest department and the communities and assist the communities in management of the reserves.

Biodiversity heritage sites

Section 37 of the Biodiversity Act 2002, states that the state government may notify areas of biodiversity importance as Biodiversity Heritage Sites (BHS) under the Act. The state government may then frame rules for the management and conservation of all heritage sites. The National Biodiversity Authority's 'guidelines for selection and management of BHS' provide for restrictions to be imposed on development activities in the demarcated areas; however, the same seems to be an option for the communities, and the Act does not provide for any concrete restrictions on development. This means that the community, by declaring a BHS, may at best get legal recognition for conservation efforts in the area, but might not be able to prohibit a development threat completely.

At present there are only seven biodiversity heritage sites notified in the country. Most of the state notifications have not provided for any stringent restrictions on development activities in the notified area. The only state to put considerable restrictions within a BHS is Maharashtra and even that is restricted to the collection of species and plants from the area in 'Glory of Allapalli' – clearly not commensurate with the legal protection intended in the act.

Identifying compatible land use in corridors: ESZ guidelines as a valuable tool

While demarcation of existing corridors in terms of legal categories such as an ESZ, community reserve or conservation reserve is an essential starting point, the focus must ultimately be on the land uses that are compatible with the ecological functions of the corridor. Identifying compatible land uses that can be sustained within the wildlife corridors thus becomes crucial. However, it is important to recognise that

62. Ibid at 56.

63. See www.wiienviis.nic.in/Database/Community%20Reserves_8228.aspx (Last accessed 24 January 2016).

changing land use patterns around protected areas have made it increasingly more difficult to impose restrictions through favourable legal instruments.

When it comes to identifying the compatible land uses that can be sustained within the wildlife corridor, the ESZ guidelines clearly point to a four-fold classification of activities that are *allowed*, *promoted*, *regulated* or *prohibited* within the notified area and the same has been adapted by the states in the notifications. As a way forward, the same four-fold classification could also be adapted in conservation reserves and community reserves. It is important to list the compatible land uses in both conservation and community reserves because a general survey of the notified community and conservation reserves does not provide any guidance whatsoever on compatible land uses that can be sustained within the notified area.

The broad list of activities which could be *allowed*, *promoted*, *regulated* or *prohibited* within an ESZ is enshrined within the guidelines. An excerpt below depicts the classification for reference:

S. No.	Activity	Prohibited	Regulated	Permitted	Remarks
1	Commercial Mining	Y			Regulation will not prohibit the digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing for personal consumption.
2.	Felling of trees		Y		With the approval of the concerned authority
3.	Setting up of industries causing pollution (air, water and land pollution)	Y			
4.	Establishment of hotels and resorts		Y		As per approved master plan
5.	Organic farming			Y	Should be actively promoted

Conclusion

This article has attempted to, at the outset, establish that the scientific and intellectual bases for corridor conservation are well-founded and beyond doubt. The conservation and effective ecological management of corridors becomes a difficult exercise for two principal reasons: the complex semantics of the exercise of definition (the form and functionalities for corridors being different depending on the species using them) and the complex politics at play owing to the competing economic pressures between various stakeholders. Policy decisions in favour of ecological conservation always have an opportunity cost in the form of livelihood/economic loss for people, which serve to disincentivise decision-making authorities. As is evident from the discussions in Part III, corridors in India face a number of threats to their protection. It can also be seen that the present legal framework, though not totally unequipped to conserve and protect them (sections 36A, 38-O and 38 V of the WLPA are cases in point), needs to be supplemented with political will and a growing awareness about ‘the ecological argument’ alluded to previously.

In the face of these challenges, solutions must be creative. While extant spaces must be fully and effectively utilised, lessons can also be learnt from the discussions on international legal frameworks in Part II. The prescription of qualitative conservation goals in European instruments – through the incorporation of terms such as ‘favourable conservation status’ of natural habitats (Article 3 of the Habitats Directive), which hold responsible authorities to a higher degree of care in conservation – is a feature worth incorporating into our own statutory framework. Not only will this do away with the difficulty of defining a nebulous concept like a corridor, it will ensure that conservation schemes (such as the MoEF’s protection of

wildlife outside protected areas) work towards results rather than merely following procedures with no definite objectives or goals. The US experience with conserving habitat linkages is instructive in the methodology that must supplement the law – for the problem is not only one of the law being unable to keep up with fast-paced environmental change, but equally one of its implementation being difficult owing to competing interests in land-use patterns. The (qualified) success story of the pronghorn corridor taught us that for effective policy change, the process must involve a dialogue between all stakeholder groups, and the problem must be phrased in a way so as to reconcile the competing interests between those groups. This is a tall order; but without this, even the most effective legal frameworks for corridor conservation will be rendered infructuous.

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LEGAL SPACES FOR WILDLIFE CORRIDORS

Exploring legal spaces for corridor protection as ESZs, Community Reserves, Conservation Reserves, Community Forest Resources, and Biodiversity Heritage Sites





UNDERSTANDING THE THREAT TO WILDLIFE CORRIDORS

Wildlife corridors in India are under severe threat from social and economic demands. Growing pressure from linear infrastructure, irrigation, mining, and human habitats, have pushed most natural spaces into islands and fragmented corridor spaces between source areas. A primary concern for corridor management is the growing **linear infrastructure** network in the country, particularly in light of the recent push to ease the environmental clearance process¹.

Some of the prominent examples of linear infrastructure cutting across PAs and critical corridors are NH 72 and 74 crossing Rajaji National Park, NH 6 and 7 crossing through the biodiversity rich central India landscape intersecting 6 tiger corridors in the Vidarbha region of Maharashtra,² NH 37 through Kaziranga National Park, and NH 54 through Borail Wildlife Sanctuary in Assam, among many others. National and state highways intersect and traverse through almost 26 of the 42 PAs declared as tiger reserves in the country.³ **Mining and irrigation** projects pose another major threat to corridors. Tadoba Tiger reserve is connected to other habitats in Andhra Pradesh in South, Gadchiroli in east and Nagpur in North through three major corridors. Irrigation and mining projects in the area have led to widespread fragmentation and discontinuous migratory routes for tigers. An irrigation canal cutting across Brahmapuri forest division adjoining the tiger reserve and recent clearances⁴ to mining projects in Chandrapur on the fringes of Tadoba have already

WHAT IS A CORRIDOR?

Corridors, in the larger space of ecological conservation, occupy a unique space. Their role and vitality in species conservation is well documented, but their definition is a source of constant confusion. The National Tiger

Conservation Authority (NTCA), constituted under the Wildlife (Protection) Act, 1972 (amendment 2006), defines wildlife corridors as inherent geographical linkages (through forests, river courses or other habitat attributes) which facilitate movement of tigers and other wild animals from one source area to another. Generally speaking, a corridor can be defined as 'linear landscape elements, meant to establish/facilitate connectivity across habitats and increase survivorship by increasing the diversity of specific gene pools.' (Varma, 2008) In more technical parlance, ecological literature defines corridors as a fundamental landscape element (the other two are patch and matrix), being narrow strips of land which differ from the matrices on either side. While the Wildlife Protection Act, 1972, under section 38V mandates that the state government shall prepare a Tiger Conservation Plan, when notifying an area as a tiger reserve, so as to ensure "ecologically compatible land uses in the tiger reserves and areas linking one protected area to another for addressing the livelihood concerns of local people, so as to provide dispersal habitats and corridor for spill over population of wild animals from the designated core areas of tiger reserves or from tiger breeding habitats within other protected area.", the term corridor has not been defined in the act.

led to cutting off of critical corridors in the area. Further development in the area will only lead to isolation of the reserve. Apart from linear infrastructure and mining and irrigation projects, **increased migration and urbanization** continues to increase pressure on protected areas and connecting corridors. Kaziranga National Park, in the north eastern part of India, for instance, has been dealing with various anthropogenic pressures from tea gardens, human habitation and agriculture on the periphery of the southern boundary of the national park⁵. The Numaligarh Refinery case in Kaziranga⁶ where four elephants have died trying to cross an illegal wall construction in the No-development zone depicts the state of corridor management in the country. Other issues like river linking projects and development around PAs continues to threaten shrinking habitats and corridors. In light of the rampant issues, it is imperative to discuss and identify legal spaces which can be used to protect corridors.

TIGER CONSERVATION PLAN'S ROLE IN PROTECTING CORRIDORS AND THE NEED FOR IMPLEMENTATION

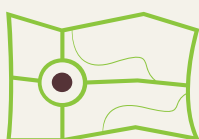
As per the Wildlife Protection Act, 1972, Chapter (IVB) mandates the constitution of the 'National Tiger Conservation Authority'. Accordingly, Section 38V enables the preparation of a 'Tiger Conservation Plan'(TCP) for the proper management of a tiger reserve. The National Tiger Conservation Authority (NTCA) has provided comprehensive guidelines⁷ for the preparation of a TCP which also include an 'Indicative plan for adjoining areas providing connectivity/corridors'. While, the guidelines clearly indicate that there is pressure on corridors from 'habitations and human activities', and provides indicative management practices to be included in the TCP, the implementation of the TCPs has not been satisfactory. The 2015 TCP of Dudhwa Tiger Reserve⁸, for example, identifies the major corridors and also provides the Corridor Zone Plan (CZP) for corridor management. However, despite futuristic measures in the CZP, little has converted into action on ground. Legal protection under the provisions given hereunder may be of use to provide additional protection to corridors.



EXISTING LEGAL SPACES UNDER THE PROVISIONS OF ENVIRONMENT (PROTECTION) ACT, 1986, WILDLIFE (PROTECTION) ACT, 1972, THE NATIONAL BIODIVERSITY ACT, 2002 AND THE FOREST RIGHTS ACT, 2006

Examples of Tadoba, Kaziranga and Rajaji National Parks make it amply clear that existing mechanisms for corridor protection have not been able to translate into action on the ground and unless a stronger legal regime is envisaged, it will become increasingly difficult to prevent these socio-economic factors from destroying corridor connectivity. While the law does not recognise corridors as a category for protection, wildlife corridors have found mention in certain environment and wildlife laws and guidelines, as noted above. Most of these legal measures have hardly been used by the government to protect wildlife corridors and have remained largely dormant spaces in law. Some of these legal measures – Eco Sensitive Zones, Conservation Reserves, Community Reserves, Community forest rights and Biodiversity Heritage Sites, and their legal capacity to protect corridors, are explained hereunder:

1. Notification of Eco - sensitive Zones



An Eco-sensitive zone is the area surrounding a protected area and acts as a 'shock absorber', with restricted commercial activity, to reduce pressure on the PAs. Considering most Wildlife corridors are threatened by increased industrial activity and human habitation, it can be advantageous to use this provision for the declaration of a corridor as an ESZ.

The Ministry of Environment and Forests (MoEF) issued Eco-sensitive zone guidelines in 2011, in accordance with the 'Wildlife Conservation Strategy, 2002', the National Wildlife Action Plan (2002), National Board for Wildlife's letter dated 27.05.2005, and Supreme Court's directions to states, to declare ESZs around protected areas. Accordingly the states are required to notify an ESZ, under the provisions of the Environment Protection Act 1986 and the Environment (Protection) Rules, 1986.

According to the MoEF Guidelines, a corridor can be included in the Eco-sensitive zone. Section 4.2 of the guidelines states, *“In case where sensitive corridors, connectivity, and ecologically important patches, crucial for landscape linkages, are even beyond 10 KM width, these should be included in the Eco-sensitive Zone.”* As per the guidelines, a primary step towards the notification of ESZs is to make an inventory of the different land use patterns and the different types of activities, types and number of industries operating around each of the PAs as well as important corridors. The inventory could be done by the concerned Range officers, who can take stock of activities within 10 Km of their range. Further, the process provides for the formation of a small committee comprising the concerned Wildlife Warden, an Ecologist, an official from the local self government and an official of the Revenue department of concerned area, which can suggest the extent, requirement and management of the Eco-sensitive zone.

It is pertinent to note that approximately 107 ESZ notifications have been announced by the MoEF, on its website, and the ministry is in the process of finalizing the proposals⁹. While the Guidelines clearly specify an area of up to 10KM to be demarcated as an eco-sensitive zone, the draft notifications indicates a trend contrary to the intention of creating an ESZ to conserve the forests, wildlife and environment. Just a bare reading of the draft notifications shows that most states have notified an average area of 100 meters to 4 Km as an ESZ. There are certain critical areas like Khangchendzonga National Park with a proposed ESZ of 200 meters, raising concerns for the other ecologically critical protected areas and corridors. Therefore, since most areas have still not been demarcated, it becomes imperative to engage with the forest departments to include critical corridor areas within eco sensitive zones.

2. Conservation Reserves



Section 36A of the Wildlife Protection Act, 1972 states that *“The State Government may, after having consultations with the local communities, declare any area owned by the Government, particularly the areas adjacent to National Parks and sanctuaries and those areas which link one protected area with another, as a conservation reserve for protecting landscapes, seascapes, flora and fauna and their habitat.”*

As of September 2015, there are 66 conservation reserves in the country¹⁰. Most seem to be areas in the buffer zones of PAs (like Darlaghat CR on the edge of the Darlaghat WS; Saraswati CR on the edge of the Saraswati WS), and even villages on the fringes of forest areas (such as Borgad in Maharashtra) have been declared as CRs. From the list, it can be seen that areas as small as 0.67 sq. km have been notified as CRs. But certain CRs - like Sudhmahadev in J&K (142 sq. km) and Afghanashini in Karnataka (299 sq. km) are appreciably large areas. The average size of a conservation reserve in India is about 36 sq. km - which is by no means a negligible area.

Using this legal space as an instrument to protect corridors and ecologically sensitive areas, therefore, seems like a strategy worth pursuing - especially since many CRs (Borgad and Chharidhandh, to name two) have been notified following pressure and lobbying from conservation groups. While development and infrastructure needs make it difficult to notify more protected areas with strict restrictions, the option of a CR

gives more freedom to the government to regulate activities in ecologically sensitive areas. The 2010 report (*Gajah – Securing the future of elephants in India*)¹¹ of the Elephant Task force, established under the MoEF, which recognises priority elephant corridors in the country, also emphasized on innovative methods to secure habitats beyond the Protected Areas, including Community or Conservation Reserves.

3. Community Reserves



Section 36C of the Wildlife Protection Act, 1972 states that “*The State Government may, where the community or an individual has volunteered to conserve wild life and its habitat, declare any private or community land not comprised within a National Park, sanctuary or a conservation reserve, as a community reserve, for protecting fauna, flora and traditional or cultural conservation values and practices.*” Unlike the Conservation Reserves which can be created only on Government lands the Community Reserves can be created on community and private lands.

The WLPA also mandates that after the notification of the community reserve, ‘*no change in the land use pattern shall be made within the community reserve, except in accordance with a resolution passed by the Management Committee and approval of the same by the State Government.*’

As most corridors are threatened with changing land use patterns which promote commercial development, notification of community reserves contains safeguards against changes in land use and can be used as an important legal instrument to protect wildlife corridors. As of October 2015, there are only 26 community reserves in India.¹² 22 of these are in Meghalaya, 2 in Punjab, and 1 each in Kerala and Karnataka.

4. Community Forest Rights



The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, popularly known as the Forest Rights Act 2006, provides individual and community rights to forest dependent communities. The Act allows for various community forest rights, such as nistar; uses or entitlements such as fish and other aquatic products, grazing (both settled or transhumant) and traditional seasonal resource access of nomadic or pastoralist communities etc. It also includes the right to protect, regenerate, conserve or manage any Community Forest Resource (CFR)¹³ that has been traditionally protected and conserved for sustainable use. The CFR right effectively democratizes forest governance in India¹⁴, by providing a certain degree of power to the Gram sabhas to govern and manage forests. The CFR right can therefore be used as a potential tool for the local communities to protect corridors. In areas where human wildlife conflict has grown in the past¹⁵, it might prove beneficial for communities to protect the corridor areas for easier movement of wildlife and minimize conflict.

5. Biodiversity Heritage Sites



Section 37 of the Biodiversity Act 2002, states that the state government may notify areas of biodiversity importance as Biodiversity Heritage Sites (BHS) under the act. The state government may then frame rules for the management and conservation of all heritage sites. The National Biodiversity Authority's 'guidelines for selection and management of BHS' provide for restrictions to be imposed on development activities in the demarcated areas, however, the same seems to be option for the communities, and the act does not provide for any concrete restrictions on development. This means that the community, by declaration of a BHS, may at best get a legal recognition for conservation efforts in the area but might not be able to prohibit a development threat completely.

At present there are only 7 Biodiversity heritage sites notified in the country and most of the state notifications have not provided for any stringent restrictions on development activities in the notified area. The only state to put considerable restrictions within a BHS is Maharashtra and even that is restricted to the collection of species and plants from the area in 'Glory of Allapalli' – clearly not commensurate with the legal protection intended in the act.

TABLE 1: COMPARATIVE TABLE OF EXISTING LEGAL PROVISIONS FOR CORRIDOR PROTECTION

	Eco Sensitive Zone	Community Reserve	Conservation Reserve	Biodiversity Heritage Site	Community Forest Resource
Legal provision	Environment Protection Act, 1986 and allied rules	Section 36C of the Wildlife Protection Act, 1972	Section 36A of the Wildlife Protection Act, 1972	Section 37 of the Biodiversity Act 2002	Section 3(1)(i) of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
Restriction on development activities	Partial restriction on development. Agriculture and small scale development allowed	Restriction on change in land use pattern after notification, except by a resolution passed by the management committee. Certain restrictions similar to those in a sanctuary will be implemented.	Partial restriction on development. Only government land can be converted into a conservation reserve. Certain restrictions similar to those in a sanctuary will be implemented.	No compulsory restriction placed on the area declared as a BHS, but the management committee can regulate development in the area in consultation with the community.	The community has the right to protect, regenerate, conserve or manage any Community Forest Resource. The Gram Sabha has the legal right to regulate activities within the area to restrict certain activities.
Number of declared/notified sites	30	26	66	7	—

IDENTIFYING COMPATIBLE LAND USES IN CORRIDORS: ESZ GUIDELINES AS A POINTER

While demarcation of existing corridors in terms of legal categories such as an ESZ, Community reserve or Conservation reserve is an essential starting point, the focus has to ultimately be on the land uses that are compatible with the ecological functions of the corridor. Identifying compatible land uses that can be sustained within the wildlife corridors thus becomes crucial. However, it is important to recognize that changing land use patterns around protected areas have made it increasingly more difficult to impose restrictions through favourable legal instruments.

When it comes to identifying the compatible land uses that can be sustained within the wildlife corridor the ESZ guidelines clearly point to a four-fold classification of activities that are *allowed*, *promoted*, *regulated* or *prohibited* within the notified area and the same has been adapted by the states in the notifications. As a way forward, the same four-fold classification may be adapted in conservation reserves and community reserves as well. It is important to list out the compatible land uses in conservation reserves and community reserves because a general survey of the notified community and conservation reserves does not provide any guidance whatsoever on compatible land uses that can be sustained within the notified area.

The broad list of activities which could be *allowed*, *promoted*, *regulated* or *prohibited* within an ESZ is enshrined within the guidelines. An excerpt below depicts the classification for reference:

TABLE 2: EXCERPT FROM ESZ GUIDELINES FOR CLASSIFICATION OF ACTIVITIES

S. No.	Activity	Prohibited	Regulated	Permitted	Remarks
1	Commercial Mining	Y			Regulation will not prohibit the digging of earth for construction or repair of houses and for manufacture of country tiles or bricks for housing for personal consumption.
2.	Felling of Trees		Y		With the approval of the concerned authority
3.	Setting up of industries causing pollution (Air, Water and Land pollution)	Y			
4.	Establishment of hotels and resorts		Y		As per approved master plan
5.	Organic farming			Y	Should be actively promoted

..AND FINALLY, THE 'WINDOW' OF THE NATIONAL WILDLIFE ACTION PLAN, 2017-2020

While there are existing legal spaces under the provisions of Environment (Protection) Act, 1986, Wildlife (Protection) Act, 1972, the National Biodiversity Act, 2002 and the Forest Rights Act, 2006, that can help build in regulations for corridors it is also clear that the law as it stands today - and as implemented on the ground - does not provide adequate protection for corridors. The National Wildlife Action Plan 2017-2020, released in February 2016, foresees corridor protection as an important aspect of wildlife conservation. The Plan suggests on ground demarcation of identified corridors, and restricted land use change in important corridor areas, in addition to proposing guidelines for making state corridor management plans. The Plan also recognizes the need for a long term plan for corridor management in the country and seeks to make provision in the Wildlife Act for identifying the areas of extended habitats and migratory routes (buffers and corridors) of species – a huge step in providing legal protection to corridors. The Plan does provide the right direction for corridor protection in India though it remains to be seen if the Plan manifests itself in stronger legislative and policy reforms in near future.



INFERENCES AND RECOMMENDATIONS

- The expansion of linear infrastructure, mining and irrigation, and increasing population, are amongst the most pressing concerns for corridor protection.
- Existing legal spaces under the Environment (Protection) Act, 1986, Wildlife (Protection) Act, 1972, The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 (FRA) and the National Biodiversity Act, 2002, which are ESZs, Community Reserves, Conservation Reserves, Community Forest Resource Rights, and Biodiversity Heritage Sites respectively, have remained largely dormant and can be used as legal measures for protection of corridors.
- Majority of the state submissions for ESZ notifications do not utilise the legal provision to the extent intended. A number of notifications provide for an area up to 100 metres as ESZs, even though the MoEF guidelines clearly provide for an area up to 10KMs or more as per the area requirement, defining a set precedential usage of the law in the future.
- Tiger Conservation Plan'(TCP) under the Wildlife Protection Act, 1972 as per Government of India guidelines has to include an 'Indicative plan for adjoining areas providing connectivity/corridors'. As an example the 2015 TCP of Dudhwa Tiger Reserve, for example, identifies the major corridors and also provides the Corridor Zone Plan (CZP) for corridor management. However, despite futuristic measures in the CZP, little has converted into action on ground.
- Conservation reserves like Borgad (Nashik, Maharashtra) were notified following successful lobbying from individuals and conservation groups setting precedent for use of the legal provision under the Wildlife (Protection) Act, 1972, for protection of corridors.
- The CFR rights, under the Forest Rights Act, 2006 effectively democratizes forest governance in India, by providing adequate legal powers to the Gram Sabhas to govern and manage forests, and can be an important tool in areas with increased human- wildlife conflicts.
- Post demarcation of a wildlife corridor as an ESZ, conservation or community reserve, or biodiversity heritage site, it is imperative to identify compatible land uses that can be sustained within the wildlife corridor.
- The National Wildlife Action Plan 2017-2020, envisages protection of wildlife corridors under the Wildlife Protection Act, 1972 and recognises the need for corridor management plans by states in the future, finally recognizing the importance of wildlife corridors.

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- 13 Forest Rights Act, 2006; Section 3(1)(i)
- 14 ‘Potential for recognition of Community Forest resource rights under India’s Forest Rights Act’ a report by Vasundhara, available at http://www.rightsandresources.org/wp-content/uploads/CommunityForest_July-20.pdf
- 15 A good example is the North Khairbari Forests in North Bengal which form part of a crucial wild life corridor traditionally. CFR rights have been in dispute in the area and the Gram Sabhas have been asserting their legal CFR rights to the forest in order to protect the forest and reduce human-animal conflict in the area. *Press release* - http://fra.org.in/document/Press%20Release%20oby%20Uttar%20Banga%20Ban-Jan%20Shromojivi%20Manch%20_1_.pdf

ABOUT CEL

Centre for Environmental Law (CEL) at the WWF – India was established in 1993. Since then, CEL has undergone changes in its strategy and vision to keep itself relevant with the changing conservation landscape in India. Centre for Environmental Law envisages contributing effectively to conservation outcomes by facilitating a dialogue through its ***Legal Brief Series***. They will provide an overview and a non – partisan legal analysis on issues of environmental law and policy in India.

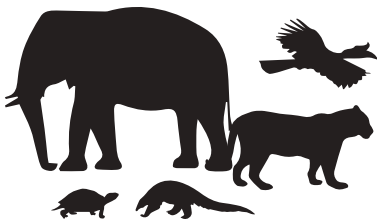


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To stop the degradation of the planet's natural environment and
to build a future in which humans live in harmony with nature.

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THE ILLUSTRATED Wildlife Trade Investigation Guide



Wildlife Trade Investigation Guide

THE ILLUSTRATED Wildlife Trade Investigation Guide

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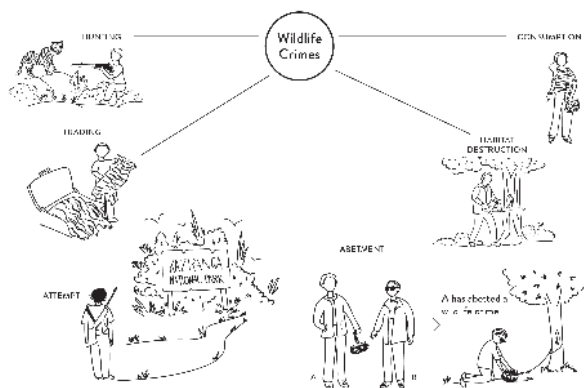
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Wildlife Trade Investigation Guide

TYPES OF WILDLIFE CRIMES



2

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Wildlife Trade Investigation Guide

1. Introduction

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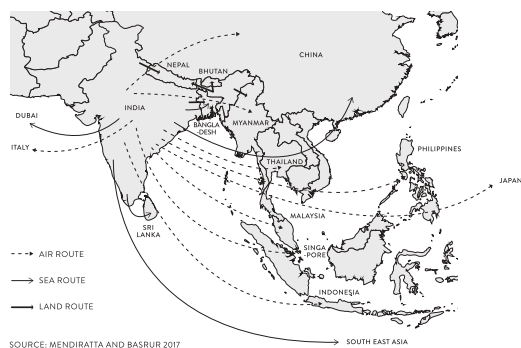
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WEALTHY MARKETS THAT DRIVE ILLEGAL WILDLIFE TRADE



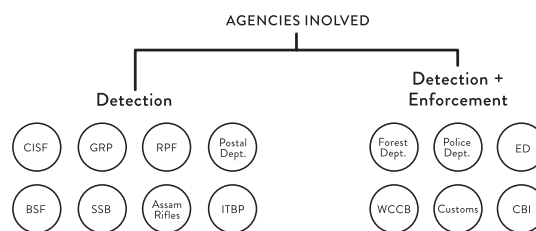
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WILDLIFE TRAFFICKING ROUTES OUT OF INDIA



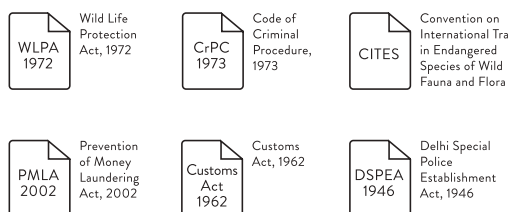
4

AGENCIES INVOLVED IN TACKLING WILDLIFE CRIME



5

SUPPORTING LEGISLATIONS TO TACKLE WILDLIFE CRIME

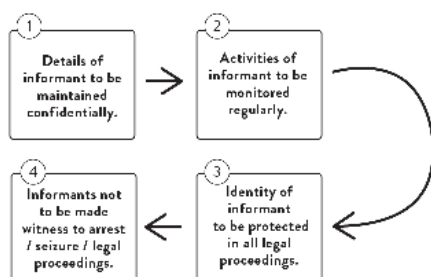


6

2. Detection & Investigation

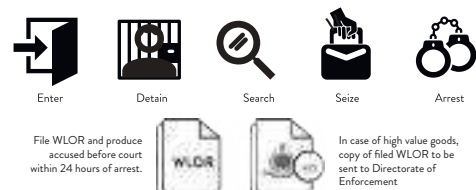
7

DETECTING WILDLIFE CRIME THROUGH INTELLIGENCE NETWORKS

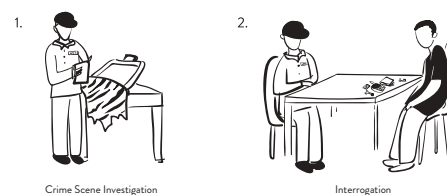


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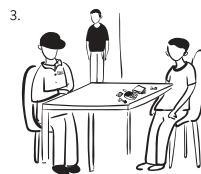
INVESTIGATION OVERVIEW



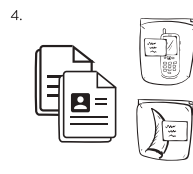
STEPS FOR INVESTIGATION



9



Examination of Witness



Analysis of Evidence

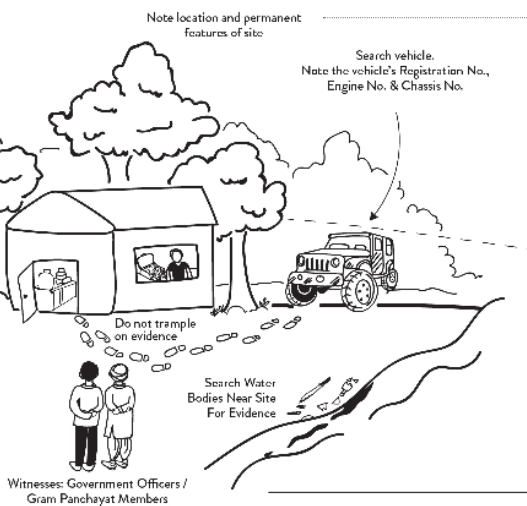
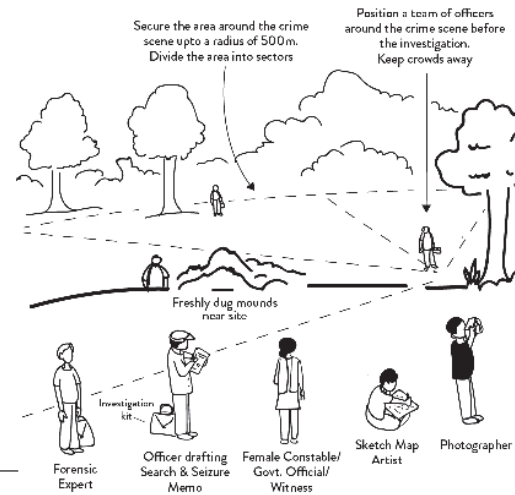


Filing a complaint under
Section 55 of the WLP, 1972
within 60 days
from date of arrest
of the accused

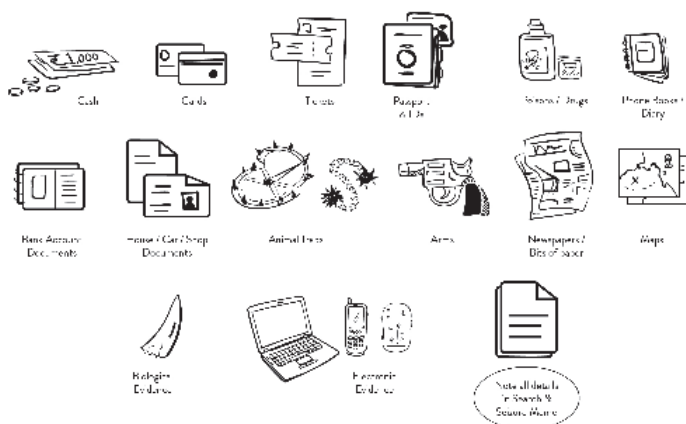
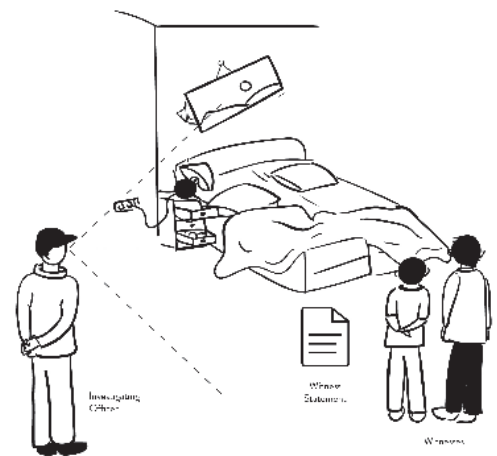
Complaint to be filed by
Director of Wildlife Preservation/
Chief Wildlife Warden /
an officer authorised by the State
or Central Government

In case of high value goods, copy of filed complaint to be sent to Directorate of Enforcement

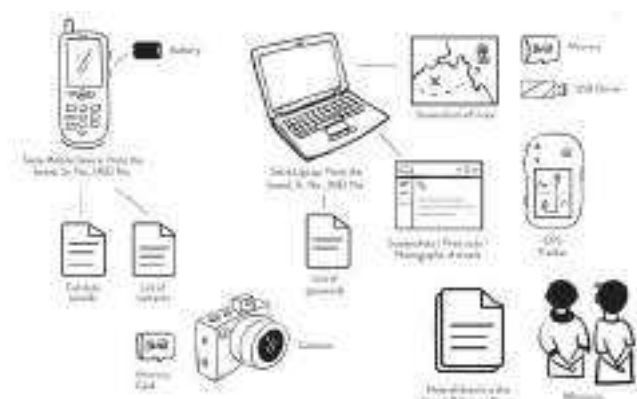
SEARCH & SEIZURE SCENARIO: OUTDOORS



SEARCH & SEIZURE SCENARIO: INDOORS



ELECTRONIC EVIDENCE COLLECTION



BIOLOGICAL EVIDENCE COLLECTION



BIOLOGICAL EVIDENCE: COLLECTION & SEALING



ARREST



3.  Personal search of the accused & articles found on their person to be mentioned in the Arrest & Personal Search Memo

4.  Arrest & Personal Search Memo with personal details of accused at the scene of arrest.

5.    Photographs & finger prints to be collected in a Personal Profile. Details to be given to District Crime Records Bureau / Modus Operandi Bureau & Fingerprints Bureau

[illegible]

10.  Arrest & Personal Search Warrant (with left margin impression) to be provided by the accused witnesses & the Investigating Officer. Copy to be provided to the accused under acknowledgment.

11. **24 hr**  **Ways: 24 hours of work, including travel time, present the accused before a Judge Magistrate along with Ronald Reagan, ensuring a standard each hour.**

For more judicial economy is encouraged. Else a petition under Section 167, CrPc.

3. Wildlife Offence Report and Judicial Custody

WRITING THE WILDLIFE OFFENCE REPORT

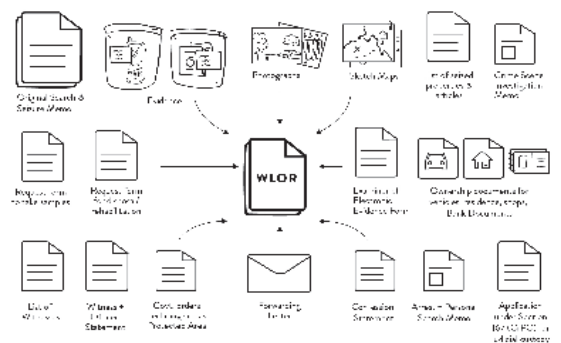


In case of absconding person, efforts made to find the absconded must be clearly mentioned

WCR should be preferably typed, or (should be neatly hand written) without any over-writings or alterations.

- Should be specific and without any ambiguity.
- Should be in plain language and narrated sequentially.
- Name of the species, Schedule, quantum of punishment prescribed, whether accused is a first time or a repeat offender should be mentioned.
- Officer filing the complaint should sign all pages of the WLOR.
- WLOR must have a prayer seeking judicial custody of the accused and permission to send seized evidence for forensic examination.

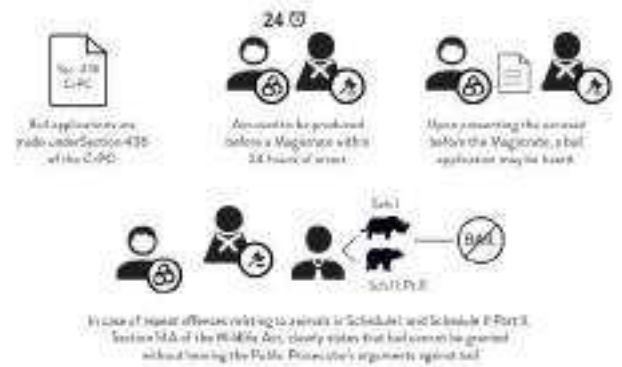
WLOR CHECKLIST



REGISTERING THE WLOR

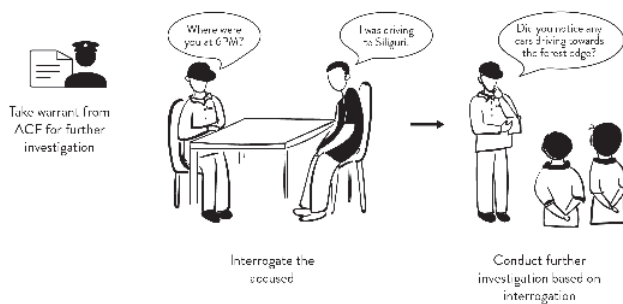


BAIL

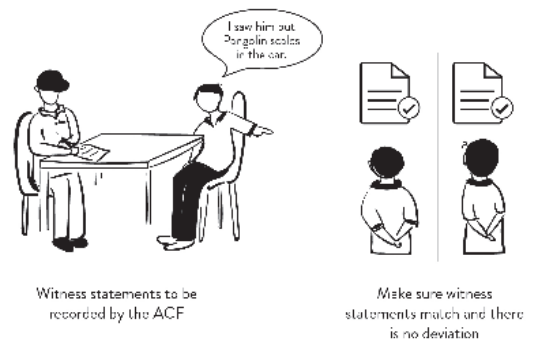


4. Investigation Post WLOR

INVESTIGATION POST WLOR



RECORDING STATEMENTS - WITNESS

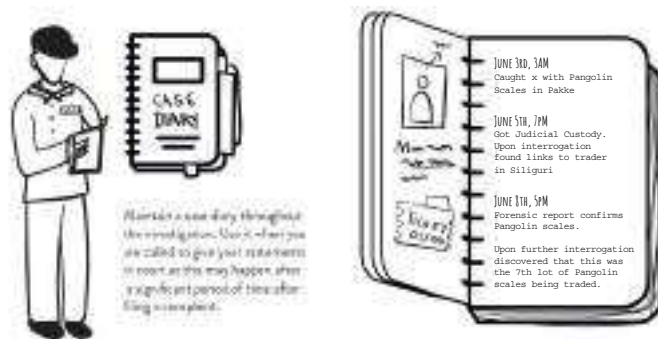


RECORDING STATEMENTS - CONFESSION



34

IMPORTANCE OF A CASE DIARY



35

ANALYSIS

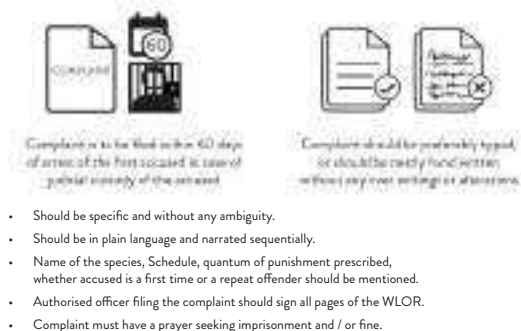


36

5. Complaints

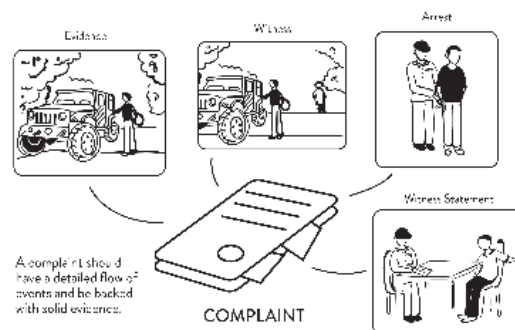
37

WRITING THE COMPLAINT



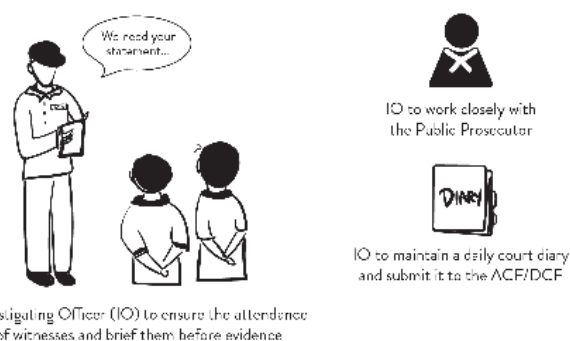
38

OVERVIEW OF A COMPLAINT



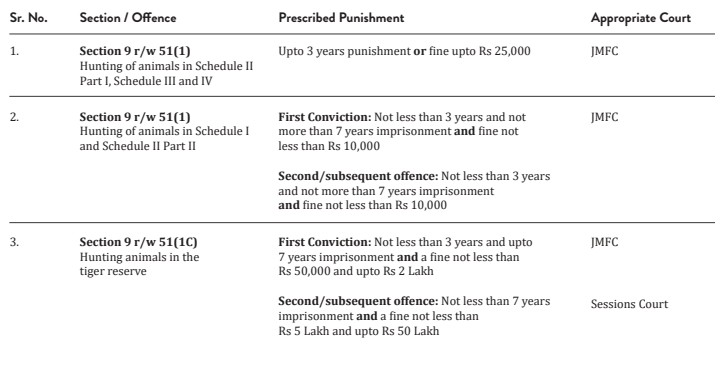
39

PROSECUTION



*COMMON OFFENCES IN WILDLIFE TRADE

Trade and Hunting Offences under the Wild Life (Protection) Act, 1972



Sr. No.	Section / Offence	Prescribed Punishment	Appropriate Court
6.	Section 42 r/w 51 Certificate of ownership Section 44 r/w 51 Dealing in trophy and animal articles without license prohibited Section 48 r/w 51 Purchase of animal, etc. by licensee Section 48A r/w 51 Restriction on transportation of wildlife Section 49 r/w 51 Purchase of captive animal, etc. by a person other than a licensee Section 49B r/w 51 Dealing in trophies, animal articles, etc of Schedule I and Schedule II Part II animals	In case of Schedule I & Schedule II Part II species, not less than 3 years and upto 7 years imprisonment and fine not less than Rs 10,000 In case of Schedule II Part II, Schedule III and IV species, not more than 3 years or fine upto Rs 25,000	JMFC

Sr. No.	Section / Offence	Prescribed Punishment	Appropriate Court
7.	Chapter VA Prohibition of trade or commerce in trophies, animal articles, etc. derived from Scheduled animals	Not less than 3 years imprisonment and upto 7 years and fine not less than Rs 10,000	JMFC
8.	Section 52 r/w 51 Attempts and abetment	Same punishment as the offence attempted or abetted	

Note: When a person commits an offence in relation to the core area of a tiger reserve or where the offence relates to hunting in the tiger reserve-

First conviction is punishable with not less than 3 years upto 7 years imprisonment and also a fine not less than Rs 50,000 and not more than Rs 2 Lakh.

In case of repeat offenders, imprisonment for not less than 7 years and fine not less than 5 Lakh rupees and not more than Rs 50 Lakh.





Photo: Dey Sandip/Wikimedia

Chasing Chacha

First published in *Sanctuary Asia*, Vol. 35 No. 12, December 2015

How India's most notorious tiger-parts trader since Sansar Chand was caught.

By Cara Tejpal

First published in Sanctuary Asia, Vol.35 No. 12, December 2015.



Photo: Ranjit Deshmukh/TOI.

Karthik Shukul though neither a filmmaker nor storyteller, is the Special Counsel for the Maharashtra State Forest Department, and he exposes the story of India's tiger crime cartel and how significant steps are being taken to bring them to justice.

In February 2013, a tiger was poached in the Melghat Tiger Reserves Ghatang Range. As the news of the killing picked up mileage, and intelligence on organised poaching syndicates began to filter in,

authorities sounded a red alert. Three months later, in May, four more big cats were poached in the Central Indian landscape, calling the efficiency of the presiding officials into question.

The first breakthrough came on June 6, 2013, when acting on reliable intelligence, authorities were able to arrest Mamru and Chika, two notorious poachers from the *Baheliya* community.

Mamru and Chika proved to be the loose threads in an unnervingly vast tapestry of wildlife criminals spread across the country. As their interrogation progressed, the tapestry began to unravel, and by the end of the year, law enforcement agencies had registered over 12 Preliminary Offence Reports, arrested over 25 individuals, seized crores worth of contraband as well as hard cash, and discovered that the syndicate had annihilated around 20 tigers in the Central Indian landscape in the past year.

As the network of criminals - ranging from poachers to skimmers and carriers to traders - and their roster of crimes were exposed, the Maharashtra State Forest Department netted the biggest catch of all - Chacha, an international tiger-parts trader of alarmingly prodigious influence and reach.

Most people assume that a wildlife crime story ends with the arrest of the accused, but in reality that's just the beginning. Once wildlife crime cases enter the quagmire of India's judicial system, they languish for years and rarely result in convictions. Released on bail or acquitted, the accused coolly return to their brutal trade, leaving conservationists frustrated and helpless.

This though is a snapshot of the complex links between those who profit from tiger blood, and how with persistence, legal acumen, and the cooperation of invested bodies, the Maharashtra State Forest Department won a landmark round against Chacha. Presenting a potent case, the department succeeded in having Chacha's bail cancelled, effectively keeping India's most dangerous tiger-parts trader behind bars. This was no breezy victory. Chacha's bail applications traversed multiple courts over the course of a year, but were adroitly countered at each turn until ultimately being cancelled once and for all by the High Court in an order that was upheld by India's highest judicial forum, the Supreme Court.



File picture of Naresh alias Lala. Photo: Ranjit Deshmukh/TOI.

Key Players

Chacha alias Suraj Pal

Conservationists concur that Chacha is India's most notorious tiger-parts trader since Sansar Chand. With contacts in Nepal and China, the 68-year-old has been at the nucleus of wildlife crime in India since 1972, eluding law enforcement authorities till 2013. He is currently lodged in Tihar Jail.

Sarju Bagdi alias Surajbhan

A well-connected middleman and carrier, his name appeared in the statements of various poachers arrested in Maharashtra in 2013. He is believed to have purchased at least five tiger skins from these poachers for Chacha. Evidence shows that he has contacts in Nepal. He was arrested along with Lala in 2013, and is lodged in Nagpur Central Jail.

Naresh alias Lala

Closely linked with Sarju, and also a trader and carrier, 35-year-old Lala served as a mule-ferrying contraband across the country on Chacha's instruction. He was arrested in 2013 along with Sarju. Lala was released on bail which was later cancelled by the Honourable Nagpur Bench of the Bombay High Court.

Mamru and Chika

Seasoned poachers from Biruhali, Madhya Pradesh, they were arrested in 2013. Call Detail Records (CDR) revealed that they were in touch with trader Sarju Bagdi, who spoke with Chika over 100 times. Both are currently lodged in Nagpur Central Jail.

Kartik Shukul

Wildlife lover and photographer, Advocate Kartik Shukul appears as the Special Counsel for the Maharashtra Forest Department. He provides his exemplary services pro bono in the interest of wildlife conservation.

Bailing On Chacha - A Timeline of the Case

June 6, 2013: Mamru and Chika are arrested from Amdi Phata in Nagpur, Maharashtra. During interrogation, they confess that five tiger skins were procured from in and around Nagpur by trader Sarju Bagdi.

September 7, 2013: Acting on intelligence, the Maharashtra Forest Department and the Wildlife Crime Control Bureau (WCCB) with the assistance of Delhi Police (DP) arrest Sarju and Lala after a short car chase. Eighteen kilogrammes of tiger derivatives and cash to the tune of Rs. 2.75 lakh is recovered from their car. During interrogation, they name Chacha as their buyer.

September 7, 2013: Later that day, the Forest Department, WCCB and DP raid Chacha's house in Adarsh Nagar, Delhi. They arrest Chacha and recover Rs. 50 lakh, animal nails of undetermined origin and Chinese currency from him. Chacha confesses to his part in the wildlife trade since 1972.

October 2013: Chacha applies for bail in Delhi where he was arrested, as well as in Nagpur where he was arrested thereafter.

January 16, 2014: After listening to arguments for over two hours, the Judicial Magistrate First Class rejects Chachas bail application. The court supports Advocate Shukul's argument that Chacha is a hardened criminal.

April 17, 2014: Stating that there has been no change in circumstance since his last plea, the Judicial Magistrate First Class once again rejects Chacha's bail application.

July 30, 2014: Chacha appeals against the last rejection and after reserving his decision, District and Sessions Judge S.D. Jagmalani goes on to grant him bail.

December 12, 2014: Justice S.B. Shukre of the Nagpur Bench of the Honble Bombay High Court cancels Chacha's bail under Section 439 (2) of the Criminal Procedure Code on the basis of arguments put forth by Advocate Shukul.

July 16, 2015: A Supreme Court Bench, headed by Chief Justice of India H.L. Dattu, upholds the order of the High Court, once and for all putting an end to Chachas bail pleas.

The Problem With Bail

The problem with granting bail to those involved in wildlife crime, especially poachers and traders, is simply that once bail is posted, they disappear. Many of these individuals hail from the nomadic *Bawaria*, *Baheliya* and *Pardhi* communities and are difficult to trace. With no permanent address, constantly changing identities, assets in cash, the lure of high profits, and knowledge of low conviction rates, wildlife poachers and traders find little reason to obey the law of the land.

The perfect case study to illustrate this problem is the abysmal track record of the brothers Keru and Ajit Chhiyalal Rajgond. The siblings have repeatedly been arrested in tiger poaching cases, and each time, upon getting bail, have vanished into thin air, only reemerging the next time they are arrested. In the most recent incident, the brothers had killed two tigers in Umred in 2013 by means of a steel trap and a spear to the mouth. It was the skins of these tigers that were supplied to Chacha through Sarju.

Currently, Ajit is in jail while Keru is absconding.

Chachi's Plea

When Chacha was arrested in Delhi in September 2013, authorities from the Maharashtra Forest Department and Wildlife Crime Control Bureau seized Rs. 50 lakh in cash and a cell phone from him.

Chacha's wife Chandadevi sought the release of the money claiming that it was received from the sale of a property, but her appeal was rejected first by a trial court and then the sessions court. For their part, the Central Bureau of Investigation and state of Maharashtra, who are jointly probing the cases involving Chacha, opposed Chandadevis application and sought custody of the money as case property.

Reportedly, the serial numbers of and fingerprints on the currency can provide fresh leads to the whereabouts of two Tibetans, Sonam and Phasang, who are believed to carry tiger skins across the Indian border into Nepal and Tibet.

A Kick In The Teeth

In the hope of a lenient trial, Mamru and Chika claimed to be underage at the time of committing the crimes they were charged with, and asked to be tried under the *Juvenile Justice Act*. The two submitted birth certificates to this effect to the Judicial Magistrate First Class. However, the Forest Department challenged the legitimacy of the documents and during a cross examination of the issuing officer Dinesh Patil, sub-registrar, Biruhali, proved that the documents were invalid. "I issued the certificates as my senior had asked me to do so. I had only asked some elderly persons in the village about the duo," Patel told the court.

Interestingly, ossification tests were also carried out to determine the age of the poachers. Dentists from the Government Dental College first claimed that Mamru and Chika were juveniles when they committed the crime, but later did an about turn during cross-examination, stating that they were at least 19-years-old at the time.

A Conservation Victory

This is the first time that a High Court has laid down the parameters for the grant and cancellation of bail for offences under the *Wildlife Protection Act* (1972). It is also the first time that the High Court has clarified that the quantum of punishment (in this case, a maximum of seven years of imprisonment) shall not be the sole guiding factor in the consideration of bail. The gravity of the offence has to be taken into consideration while entertaining bail applications for offences under the *Wildlife Protection Act* (1972).

By endorsing the judgement of the High Court, the Supreme Court has granted finality to the order and set a stunning precedent. In fact, after the judgement was passed; the High Court allowed the cancellation of another bail application, one pertaining to an accused whose role was limited to transporting wildlife contraband for just 50 m.

Buttressed by a strong prosecution, India's judiciary has sent a clear warning that wildlife crime operators, whether big or small, will be dealt with an iron fist.

Wielding The Law - A brief interview with Special Counsel [Kartik Shukul](#)

In your view, what are the main loopholes in laws related to wildlife crime in India?

The biggest hurdle in the present law would be the quantum of punishment (three to seven years) under the *Wildlife Protection Act (WPA)*. Criminal courts evaluate the seriousness of a crime on the touchstone of the quantum of punishment; ergo, offenders under the WPA were considered at par with petty thieves. While arguing this case, it was my endeavour to showcase the WPA as a special law that must not be subjected to such broad propositions. My attempt was to make the gravity of the offence and its overall impact the prime considerations that must guide the courts while dealing with offences under the said act. By this judgment, we have removed this hurdle for all future cases and it has been settled now that the quantum of punishment shall not be the dominant guiding principle for offences under the WPA.

What was the most challenging aspect of having Chacha's bail revoked?

It is almost impossible to exhaustively cover all the challenges I faced; but one of the major issues was the age of the accused (68 years), especially since he claimed that he was suffering from various ailments. Through our investigations we knew that these grounds were false, but proving this was a rather difficult task. In addition to this, we had with us only the statements of the co-accused to establish the nexus between Chacha and the others. All these issues were overcome by the use of forensics to establish beyond any doubt the direct involvement of Chacha in the crime. I argued before the courts that the accused is the kingpin in this illegal syndicate and his release would adversely impact not only the investigation but also the trial. Chacha, being in a dominant position, could prevail over the witnesses and possessed the power to tamper with the evidence as well.

How can state Forest Departments strengthen their cases to ensure more convictions?

At the outset I must say that the new state government has taken the cause of “conservation through prosecution” seriously. Various changes (ex-appointments of Special Counsels and Supervisory Committees for poaching cases) have been made with the singular objective of increasing the conviction rate. Recently, the Maharashtra state government has created three ‘Cyber Cells’ dedicated to poaching cases and in the brief period that they have been operational, the state Forest Department has utilised the Cells with great efficiency. However, much remains to be done in this field; the officers who are appointed as Investigating Officers must be given specialised training since the scene of the crime in most poaching cases is deep inside the jungle. Locating and collecting evidence in these places is challenging, therefore, establishing a direct nexus between the offender and the crime becomes rather difficult. Specialised training in the field of forensics must be imparted to these officers to establish a strong foundation for the prosecution. I also strongly feel that the Forest Department needs to set-up a dedicated legal department to tackle the thousands of pending cases.

What is the impact of these cases on poaching activities in the state?

It is reliably learnt that since this criminal litigation has been initiated, the number of poaching cases have gone down in the state. The fact that the accused are still behind bars (even after two years) is perhaps acting as a deterrent in addition to ensuring a fair and free trial. This therefore establishes a belief that I have long nurtured, effective prosecution is a tool for conservation.

ILLICIT WILDLIFE TRADE: ADDING FUEL TO THE PANDEMIC FIRE

BLOG

🕒 November 13, 2020

👁 945

Illicit Wildlife Trade: Adding fuel to the Pandemic Fire

Madhubanti Sadhya, *Teaching Associate, CEERA-NLSIU*

Milind Rajratnam, *Intern, CEERA-NLSIU*

“To prevent future outbreaks, countries need to conserve wild habitats, promote sustainable agriculture, strengthen food safety standards, monitor and regulate food markets, invest in technology to identify risks, and curb the illegal trade in wildlife,”

– **António Guterres**, U.N. Secretary-General

Introduction:

On 11th March 2020, the World Health Organization declared COVID-19 outbreak as a pandemic due to the nature and severity of its spread. Till now, the novel coronavirus has affected more than **200 countries** and territories around the world with a total of **1,36,99,621** confirmed cases and a death toll of **5,86,974** deaths (as on 16th July 2020).

Starting from a wet market in Wuhan, the novel corona virus has spread all over the world. The zoonotic origin of the novel corona virus has been substantiated by the **WHO-China Joint Mission Report on COVID-19**. The report notes that, even though the intermediate host of the novel corona virus has not been identified yet, bats appear to be its reservoir as the genome sequence of novel corona virus (SARS-CoV-2) is **96% identical** to bat corona virus strain (BatCov RaTG13), and **91% similar** to Pangolin-CoV.

Zoonotic diseases or **zoonoses** are triggered by harmful germs (like bacteria, viruses, etc.) that are transferred naturally between vertebrate animals and humans. The ongoing pandemic has highlighted a number of other zoonoses that have posed a significant threat to human health in the past few decades. Many of these diseases strongly indicate **the correlation** between disease transmission and wildlife trade, as in most of them the poorly regulated and unsanitary wildlife markets have provided a suitable environment for the growth and transmission of these diseases among other species.

This blog post elaborates on the linkage between the spread of zoonoses and wildlife trade, and analyzes the international response to illicit wildlife trade and the existing legal framework in India concerning it.

The paradigm of emerging zoonotic diseases:

According to the International Health Regulations (2005), a **Public Health Emergency of International Concern** (hereinafter “PHEIC”) is an extraordinary event that requires an internationally coordinated response and is determined to pose a public health risk to other nations of the world through the international spread of disease. In the past few decades, most of the PHEIC declarations of the WHO were related to zoonotic viruses. The World Organization for Animal Health has estimated that about **60 percent** of all identified infectious diseases are zoonotic and around **75 percent** of the ‘new’ human pathogens that were detected in the last 25 years have originated in animals.

In March 2020, the **Royal Society of London** released **a study** cross-referencing 142 zoonotic viruses with the IUCN Red List of Threatened Species. The study revealed that rodents, bats, primates and some mammalian species are the source of most of the zoonotic viruses. It is worth mentioning that the novel corona virus is not the first global pandemic to have a zoonotic origin, as in the past few decades, the worst global pandemics have all been zoonotic in origin, including **the Great Manchurian Plague** (1910), **Risk Valley Fever** (1931), **SARS** (2003), **Swine flu** (2009) and **MERS** (2012). With regard to the spread of zoonoses, **a number of studies** indicate that wildlife trade plays a crucial role in intensifying the spread of zoonoses by increasing the likelihood of virus transmission between hosts that might not interact in nature.

A **recent report** by the U.N. Environment Program suggests that if nations do not take appropriate actions to deter zoonoses, then pandemics like COVID-19 would become more common and increasingly prevalent. This growing trend in zoonotic diseases is driven by the deterioration of our natural environment due to wildlife exploitation, climate change, land degradation, resource extraction and other stresses. The report pointed out that in the past two decades, zoonotic diseases have incurred economic losses of more than **\$100 billion**, excluding the cost of COVID-19. This report recommends “One Health approach” (uniting veterinary, public health and environmental expertise) as the ideal approach to prevent potential zoonotic disease pandemics.

International Response to Illicit Wildlife Trade:

Over the past few decades, the illicit wildlife trade has increased manifold and has emerged as a form of Organized Transnational Crime which is posing a threat not only to the existence of many wildlife species but also to economic stability and human beings at large. According to the United Nations Office on Drug and Crime (hereinafter “UNODC”), illicit wildlife trade is the **fourth largest** illegal trade worldwide following arms, drugs and human trafficking, and is **estimated** to generate more than **\$20 billion** annually.

In order to regulate it, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (hereinafter “CITES”) came into force in the year 1975 and has been ratified by **183 nations** to date. CITES is a multilateral treaty regulating international trade in more than **36,000 species** of plants and animals that may be endangered by trade. It places a **mutual responsibility** on the parties involved in a trade agreement for the sustainable management of wildlife and the prevention of illegal trade. Although large, CITES protects only a fraction of the 8.7 million species of plants and animals on Earth and does not regulate trade in a number of animals that are known to pose health risks to humans, e.g., Horseshoe bat, which is considered to be a **potential reservoir** of SARS-CoV and possible host of the novel corona virus, **is not listed** under CITES.

In support of the international response to illicit wildlife trade, the United Nations Security Council adopted **Resolution 2136 (2014)** at its 7107th meeting. This resolution recognizes the illicit trade in wildlife as a threat to international peace and security, and recalls the connection between the illicit trade in wildlife and the proliferation of arms trafficking as one of the key factors responsible for aggravating conflicts in the Great Lakes region of Africa.

Furthermore, the UNODC has also initiated its **Global Programme for Combating Wildlife and Forest Crime** in May 2014. This programme includes collaborating with wildlife law enforcement community to ensure that illicit wildlife trade, wildlife crimes and other similar activities are treated as serious transnational organized crimes. It also plays a crucial role in the implementation of specific technical assistance programs aimed at strengthening the capacity of Member States to investigate, adjudicate, prosecute and prevent crimes against protected wildlife species.

In addition, with the aim of preventing and combating illicit wildlife trade and moving forward with the same vision, the representatives from the **UNODC**, the **International Criminal Police Organization** (INTERPOL), the **World Customs Organization** (WCO), the **World Bank** and the CITES Secretariat held their **first-ever joint meeting** in Vienna in the year 2009. This has resulted in the formation of the **International Consortium on Combating Wildlife Crime** (ICCWC) in 2010. The ICCWC’s aim is to reinforce criminal justice systems and to provide coordinated assistance at regional, national and international level in the fight against forest and wildlife crimes in order to ensure that the perpetrators of severe wildlife crimes will face a coordinated and formidable response.

Status Quo in India vis-à-vis Illicit Wildlife Trade and Disease Prevention:

In India, illicit wildlife trade includes a wide range of products ranging from Elephant tusks to Mongoose hair, and a substantial part of this trade does not have a direct demand in India but is **intended for** the International market. Constant efforts have been made by both the Indian legislature and the judiciary to eliminate illicit trade in wildlife. In this respect, **Article 48A** of the Constitution of India imposes an obligation on the State to secure and improve the environment and to protect the forest and wildlife of the country. Also, **Article 51A(g)** places a Fundamental Duty on every Indian citizen to have compassion for living creatures and to preserve and improve the environment.

Apart from this, India has a special legislation, i.e. **the Wildlife Protection Act, 1972** (hereinafter “Act”), for the protection of endangered species and for the regulation of illegal trade in wildlife. The Act contains 6 schedules which provide for varying degrees of protection to different species on the basis of their vulnerability. Chapter V of the Act deals with the trade in wildlife as well as the prohibition of poaching, and declares that all the wild animals within the Indian territory are **the property** of the Government of India. Moreover, Chapter VI puts forth the penalties for the violation of the provisions of the Act and states that offences against animals listed under Schedule I and Schedule II of the act are to be considered as cognizable and non-bailable offences, in particular illicit trade in wildlife.

The **2006** amendment to the Act brought about the establishment of the **Wildlife Crime Control Bureau** (hereinafter “WCCB”) by the Government of India on 6th June 2007. The WCCB was constituted to gather and compile information relating to organized wildlife crime activities and to propagate it to the State and other law enforcement authorities for the effective intervention in order to arrest the perpetrators. It also coordinates, among other things, with various agencies for the effective implementation of the provisions of the Act.

India became a party to CITES in 1976 and the provisions of CITES **are implemented** in India by the Foreign Trade (Development and Regulation) Act, 1992 (hereinafter “FTA”), the Customs Act, 1962, and the Government of India’s Foreign Trade Policy. Under **the Customs Act, 1962**, the customs department is tasked with the prevention of illicit trade, including wildlife products. The WCCB’s Regional Deputy Directors are appointed as CITES Assistant Management Authorities and they are empowered to issue CITES import, export, and re-export permits to control the international trade in wildlife species listed in the CITES. They also accompany the Customs Department in the pre/post shipment analysis of goods that are expected to be imported/ exported from India.

Moreover, by virtue of **Section 5** of the FTA, the Ministry of Commerce and Industry periodically formulates and declares India’s Foreign Trade Policy which includes the details about the goods and products which are permitted/prohibited for the purpose of export/import. As to the wildlife species and their products, the policy is formulated in conjunction with the CITES Management Authority in India and is enforced through the Customs Act, 1962. **Section 3(3)** of the FTA specifies that all the

items (including wildlife species) protected by the Import & Export Policy are considered to fall within the scope of **Section 11** of the Customs Act, 1962. Consequently, all instances of infringement of the Import-Export Policy in general, and CITES in particular, constitute an offence under the Customs Act and are dealt with by the Customs authorities.

India holds the largest livestock population in the world and it annually produces around **5.3 million MT** of meat. The primary legislations dealing with the Indian meat exports is the **Export (Quality Control and Inspection) Act, 1963** and the Indian Government has set requirements for meat exports that include standards for the processing plants, abattoirs and different meat products. The Ministry of Commerce and Industry, the Agricultural and Processed Food Products Export Development Authority (APEDA), Food Safety and Standards Authority of India and the Export Inspection Council **are entrusted** with the task of registration and licensing of abattoirs and meat processing plants. For the purposes of registration and licensing, a Committee of Experts conducts the inspection of meat processing plants in accordance with the standards laid down in the **Meat and Meat Products Order, 1973**, and during the inspection, the focus remains on the hygiene and sanitary conditions maintained by the plants, infrastructure staff hygiene, ante-mortem and post-mortem inspections, etc.

According to **the current** Import and Export Policy, before the export of meat, every consignment is subjected to mandatory microbiological and other tests, after which the Government veterinarian issues a comprehensive **Animal Health certificate**. This certificate states that the meat has been obtained from healthy livestock, free from contagious and infectious diseases. The certificate further states that the livestock were subjected to ante-mortem inspection followed by post-mortem inspection and the meat is safe for human consumption.

Additionally, with regard to the containment of contagious diseases that may originate from trade in wildlife, the Central Government is authorized under the **Livestock Importation Act, 1898** to control or prohibit the importation of any livestock that may be liable to be infected by any contagious or infectious disease into India. For the purposes of the said Act, the Central Government has notified parrots, canaries, finches and poultry as livestock. In Chennai, Mumbai, Kolkata and Delhi, the Ministry of Agriculture & Farmers' Welfare has appointed **Animal Quarantine Officers** for the health verification of animals before and after export/import, and to issue Quarantine Clearance Certificates. If necessary, the Animal Quarantine Officer may cause any animal (to be imported/exported) for observation at a **quarantine station** for the prevention of entry of such diseased animals.

Although India is a party to the CITES, it **failed to** effectively implement the commitments required by the said convention, as the Wildlife Protection Act focusses mainly on the protection of indigenous species and the list of protected species contained therein is largely **not in compliance** with that of CITES. India is also a member of the International Union for Conservation of Nature (IUCN), and according to the **IUCN Red List, 2018**, India is home to more than 683 wildlife species belonging to vulnerable, endangered and critically endangered categories, but the Wildlife Protection Act **fails to protect** most of the species under the IUCN list. This lack of consistency between the Wildlife Protection Act and the international obligations create many loopholes that are often exploited by those involved in the illicit wildlife trade.

According to **the latest report** by TRAFFIC (a non-governmental organization working globally on trade in wildlife), notwithstanding concerted interventions by the law enforcement agencies, the incidents of wildlife poaching for their trade has increased significantly during the lockdown period. The report indicates that 88 cases of poaching were reported in open source media during the lockdown period, which is considerably higher than the 35 cases of poaching reported during the pre-lockdown period.

Conclusion:

In light of the ongoing pandemic and its ties with the illicit wildlife trade, it is high time to take stern measures against the illegal trade in wildlife so that potential pandemics of similar magnitude can be prevented. In order to significantly mitigate the risk of another zoonotic disease pandemic, we need to take concerted action at a scale comparable to the danger posed by another pandemic. Options for potential action may include enhancing the surveillance of emerging zoonotic diseases, reducing the demand for wildlife products, dismantling the infrastructure that promotes illicit wildlife trade and strengthening wildlife protection laws.

On 24th February 2020, the People's Republic of China announced its decision to place a permanent ban on trade in wildlife. Nevertheless, an analysis by **the Wildlife Conservation Society** suggests that the decision does not ban the trade in wildlife for non-food uses (e.g. biomedical research, fur, etc.), which in turn creates a loophole that may be exploited by the traffickers to trade in wildlife. Consequently, we may conclude that while this ban is a significant move towards mitigating the root cause of zoonoses, there is still scope for illegal activities.

Recently, in a public statement, the acting Executive Secretary of the United Nations Convention on Biological Diversity called for a **global ban** on wildlife markets to deter future pandemics. She said that nations across the globe should seek to ban wildlife markets, as they are a major cause of the outbreaks of zoonotic diseases.

Moreover, the **Centre for Biological Diversity** (organization based in Arizona for the protection of Endangered Species and Wildlife) and the National Resources Defense Council (United States-based international nonprofit environmental organization) has released a comprehensive **action plan** to combat illicit wildlife trade. The action plan proposes a global ban wildlife imports and restricts all other trade in wildlife until stringent laws are enforced, among other proposals. It also recommends the United States to play a global leadership role in regulating wildlife trade to prevent future pandemics.

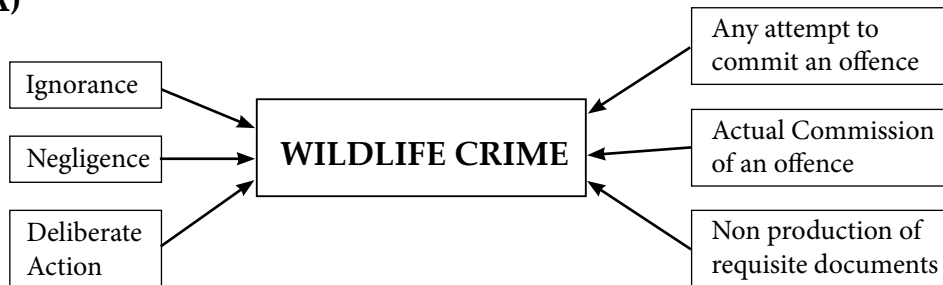
Image Sourced from – <https://www.bangkokpost.com/opinion/opinion/1883355/a-vaccine-against-outbreaks-ban-wildlife-trade>

ANNEXURE - XII

Flow Chart on WL Crime Investigation Process

Wild Life (Protection) Act, 1972, was enacted to prevent, control and conserve biodiversity of the country. It extends to the whole of India except J & K.

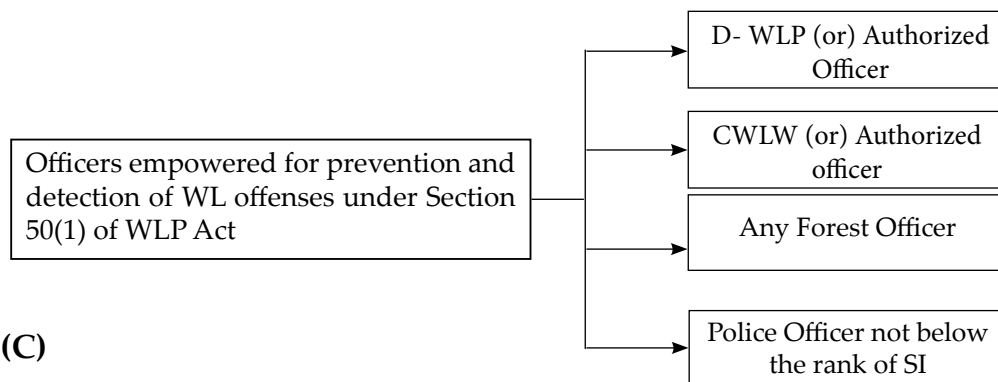
(A)



One or more offences under following Sections of WL (P) Act, 1972:

I)	17A,27,29,30,31,32,33A and 35	- up to 3 years
II)	9,39,44,48A and 49B	- 3-7 years

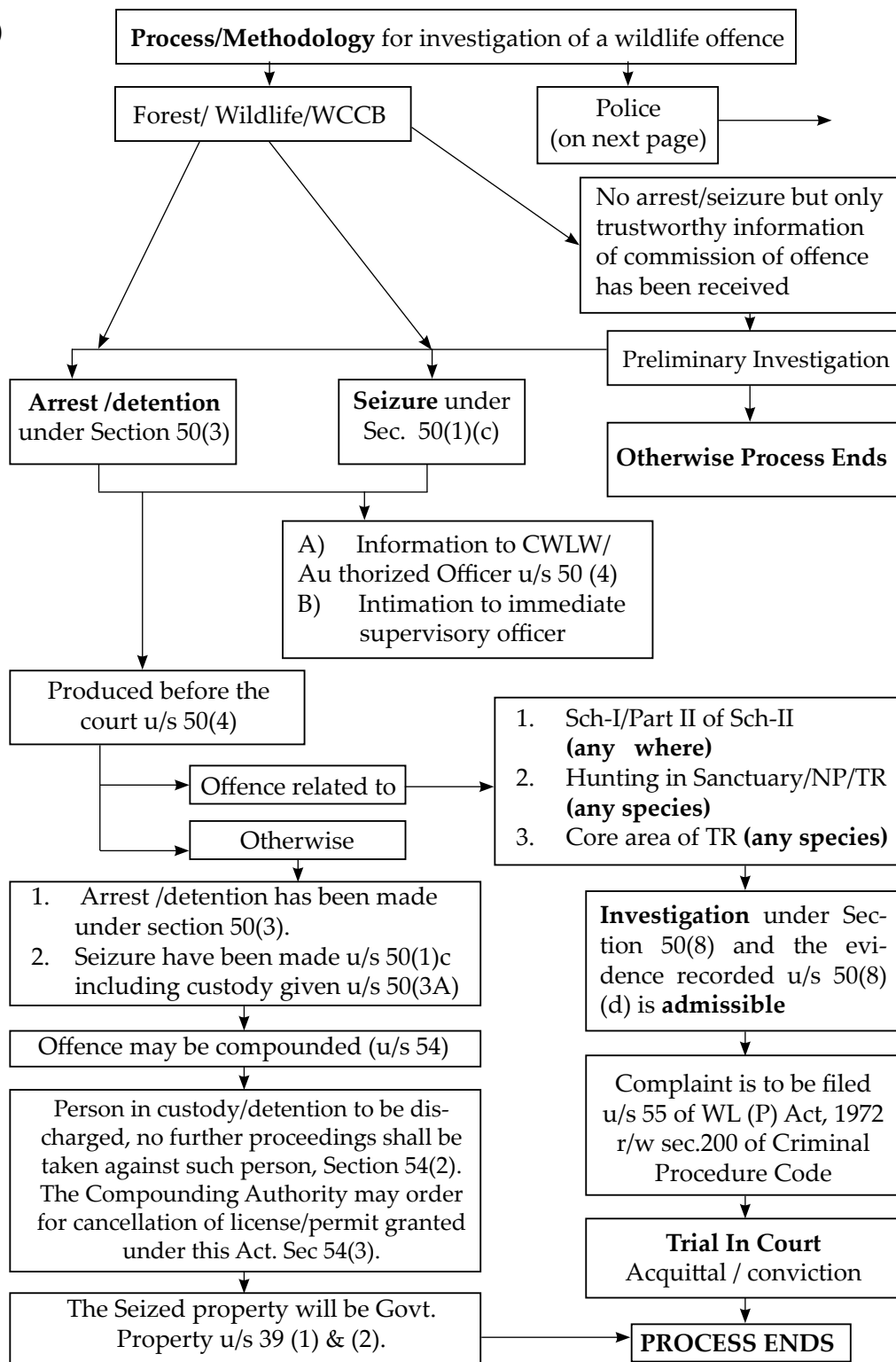
(B)

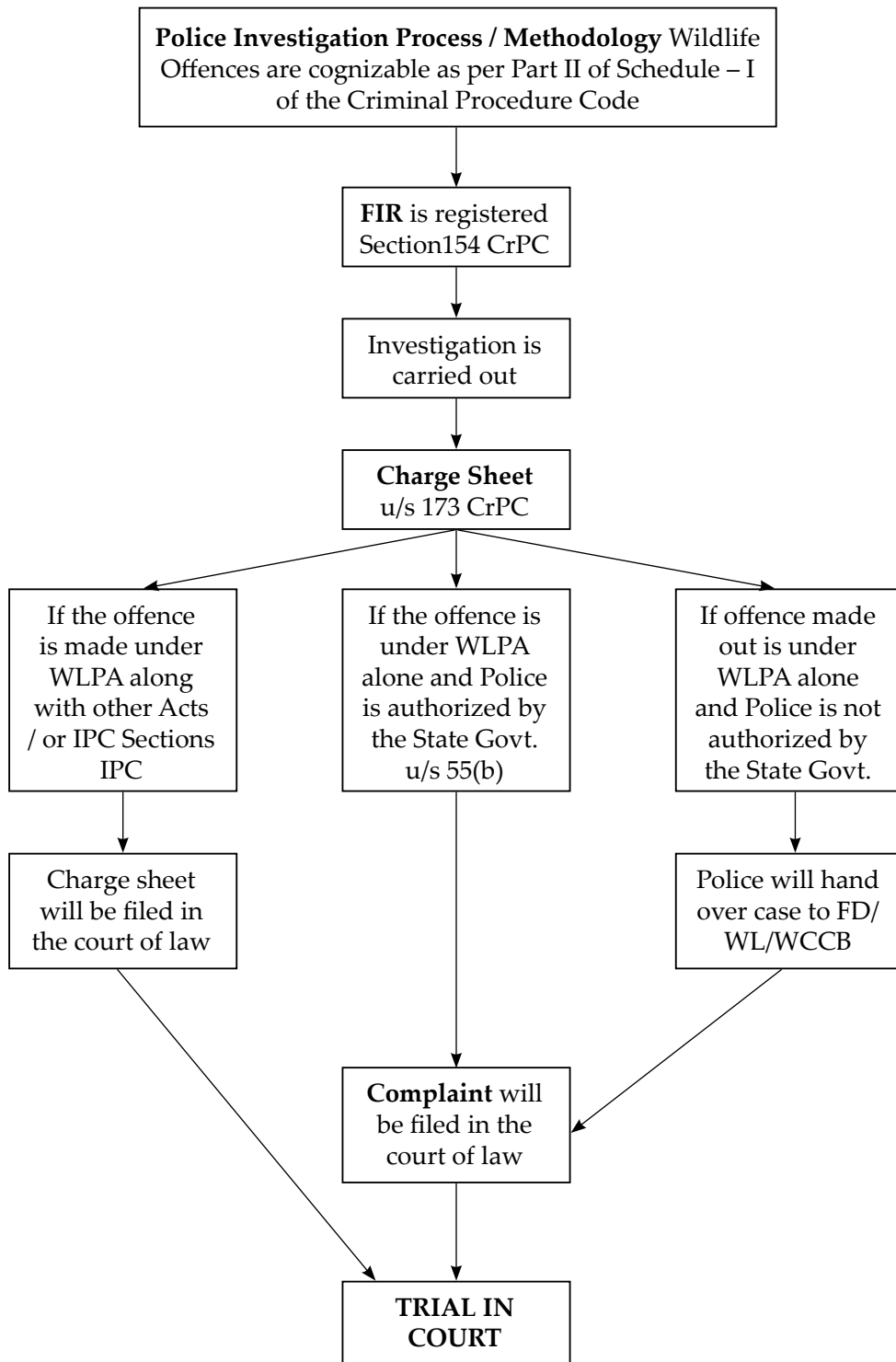


(C)

Person arrested and things seized are to be produced before the magistrate under intimation to the Chief Wildlife Warden of the State or officer authorized by him under Section 50(4) of the WLP Act

(D)





ANNEXURE - XIV

Important Judgements in Wildlife Crime Cases:

S.N	Name of the case and Court	Offence made under	Proposition Discussed
1	State of Bihar vs. Murad Ali khan and Ors. (1988)4 SCC 655 - Supreme Court.	Sections 9 (1), 51,55 of W PA Section 429 of IPC, Section 210 and 482 of Cr, PC	Objects of WPA and inherent jurisdiction discussed. Cognizance of and offence under the Act can be taken by a Court only on the complaint of the officer mentioned in Sec.55
2	Motilal vs. CBI and Ors.(2002) 4 SCC 713 - Supreme Court.	Sections 50, 51,54 and 55 of WPA, Section 4 (42) of Cr.P.C.	Offence, punishable under the Act can be Investigated by CBI. WPA is not a complete code in itself.
3	Indian Handicrafts Emporium and Ors.vs. UOI and Ors. (2003) 7 SCC 589 - Supreme Court	Article 14, 19 (1) (g) & 19 (1) 6 of COI, Sections 39,4,49-C, of WPA	Total prohibition on trade in ivory under the WPA held to be reasonable. Trade that are dangerous to the ecology may be regulated or totally prohibited and therefore regulation includes prohibition. Traders are a class by themselves. In absence of such criminal trial and offence having been found committed, Section 39 may not have any application. In that view of the matter it is evident that the properties do not stand vested in the Government in terms there for. The purport and object of the Act must be given its full effect.
4	Balram Kumarawat vs. UOI and Ors. (2003) 7 SCC 628 - Supreme Court.	Section 49-C(7) of WPA	Ban on Ivory trade. Restrictive meaning to words cannot be given.

5	Sansar Chand vs. State of Rajasthan (2010) 10 SCC 604 - Supreme Court	Articles 21, 48-A and 51-A(g) of the Constitution of India, Sections 9,49-,50 and 51 of the WPA	Ecological chain and balance - Importance of wildlife conservation for the society. Directions issued by Supreme Court to Central and State Governments and their agencies to make efforts to preserve India's Wildlife and take stringent action against those violating provisions of Wildlife(Protection) Act. Extra-judicial confession in this case was corroborated by other material on record. Hence, conviction is sustained.
6	Principal Chief Conservator of Forest & Anr. vs.J.K.Johnson & Ors., (Civil appeal No. 2534/2011 in Supreme Court	Sections 54,51(2) 39(1)(d) of WPA	The effect of composition of offence has to be found in the statute itself. Section 54(2) provides that on payment of money to the empowered officer, the suspected person, if in custody, shall be discharged and no further proceeding in respect of the offence shall be taken against such person. In terms of sub-section (2) of Section 54, therefore, on composition of the offence, the suspected person is saved from criminal prosecution, and from being subjected to further proceedings in respect of the offence. Any power of forfeiture conferred upon executive authority merely on suspicion or accusation may amount to depriving a person of his property without authority of law. Such power cannot be readily read by relying on the Statement of Objects and Reasons without any express provision in the statute. For the seized property used for commission of offence to be the property of the state government or the central government under Section 39(1)(d), in our view, offence against the Act has to be legally ascertained and adjudicated by a competent court of jurisdiction.

7	State of M.P.vs. Madhukar Rao, JT 2008 (1) SC364 Supreme Court	Section 39	Any attempt to operationalize Section 39(1)(d) of the Act merely on the basis of seizure and accusation/allegations levelled by the departmental authorities would bring it into conflict with the constitutional provisions and would render it unconstitutional and invalid.
8	Mumtaj vs. State of U.P 2000 Cri LJ4497 (Paras 5 to 7 are relevant) High Court of Allahabad.	2, Sections 49 (B) and 51 of WPA	Accused found involved in trade of skins of wild animals not entitled for bail. Ground of parity is not a compelling reason for bail.
9	Shashi Singh vs. State of Haryana And Mansoor Ali Khan Pataudi vs. State of Haryana, 2006(3) RCR (Criminal) 624 - High Court of Punjab & Haryana	Sections 9,39,50 ,57 of WPA	Taking the life of a defenceless animal, on the verge of extinction, hunting of which is specifically prohibited by Section 9 read with Schedule I of the Act, committed by the petitioners, so grave and heinous as to dissuade extending the anticipatory bail to them.
10	Forest Range Officer, Chungathara II Range vs. Aboobacker and Anr., 1989 Cri.L.J2038 - High Court of Kerala	Sections 9, 55 of WPA	Forest is an area where human activities are scanty except the clandestine adventures of poachers. The invaders of forest and wild life usually take care that their poaching techniques go unnoticed by others including wild animals. They adopt devices to keep their movements undetected. Hence it would be pedantic to insist on the rule of corroboration, by independent evidence in proof of offence relating to forests and wild life. Parliament in bringing a new legislation or (Protection) of wild life was inspired by the urge to preserve what little is left of wild life.

11	Abdul Kadar versus Govt. Of Gujrat SCR.A/1635/2010 - High Court of Gujarat	Sec 2(16),12(sec) of W.P. Act 1972, and Sec.48 & 51 A (g) of Indian constitution.	Every bird / animal (Exotic birds/ Indian Species) has a fundamental right to fly and move freely in open sky or air.
12	Case No. 5093(A)/2009 Govt. Of U.P versus Smt. Dalipo - Chief Judicial Magistrate Lakhimpur-Khiri (U.P).	2/9/39/49 /49B/52/51(A) of W.P. Act 1972	Confessional conviction but set off theory/ provision was accepted by court.
13	Govt. Of Rajasthan versus Juhru/Ramjan & others. Case No 23/318/2006 - Add. Chief Judicial magistrate, Alwar, Rajasthan.	Sec.9/27/31/39 /44/48A/49B/51 of W.P.A Act 1972	Accused were convicted.
14	Govt. of Rajasthan versus Juhru/manfool & others - Add. Chief Judicial magistrate, Alwar, Rajasthan.	Sec.27/31/9/39 /48A/49B/51 of W.P.A Act 1972	Accused persons were convicted in this case and rigorous punishment was given by the court to the habitual offenders.
15	Govt. of Rajasthan versus Juhru & others - Add. Chief Judicial magistrate, Alwar Rajasthan	Sec.9/27/31/39/44 /48A/49A/49B/51 of W.P.A Act 1972	Accused persons were convicted in this case and rigorous punishment was given by the court to the habitual offenders.

16	Govt. of Delhi versus Rajiv Khanna, Cr appeal No.1380/10 - Supreme Court of India. (SLP/Crl) No.77739/2008.	482 Sec. of Cr.P.C.Sec.34 of I.P.C	Vicarious liability & its jurisdictions relating with company/ Business/ firm/ offices etc. Justified.
17	Maharashtra State Electricity com.Ltd. & others Datar switchgear Ltd. & others - Supreme Court cases No.479/2010.	482 Sec. of Cr.P.C.Sec.34 of I.P.C. r/w192/199 Cr. P.C	Vicarious liability & its jurisdictions Relating with company/Business/ Firm/offices etc. justified
18	Forest Deptt. Of Maharajganj (U.P) versus Harsh Dhwaj Tamang & other - Chief Judicial Magistrate, Maharganj (U.P). case No.7343/2009.	9/49B/51 of W.P. Act 1972	Court up held that set off theory implied while convicting the accused i.e. the spent duration in Jail may be set off for conviction.
19	Sanjay Gandhi Animal care centre (seizure of ostriches Govt. Of NCT, Delhi & others - ACMM/ ASJ. Delhi,Tis Hazari.	CITES & provisions of W.P. Act 1972 which prohibits keeping exotic Birds/ animals as illegal without proper certification.	Whether accused has right to import and keep exotic birds without CITES certificate, proof of ownership, certificate from Quarantine officer.

20	Criminal. Revision No 41/2010-Cottage Industries Exposition versus Union of State (WCCB) - Addl. Session Judge, Delhi, Tis Hazari.	Sec.397 of Cr.P.C. Sec.40/49/49B-1/51 of W.P. Act 1972	Accused went for revision against summoning. Court held that Lower Court had discretionary Powers. Therefore accused petition for revision dismissed.
21	Kamran siddique versus Union of India - Delhi High Court WP(C) No.1038/2012	W.P. Act 1972 (Provisions) restricts personal possession of wildlife Animals.	Objects of W.P. Act 72.
22	PCCF (Govt of Andhra Pradesh versus J.K Johnson & others - Supreme Court of India Civil Appeal No.2534/2011.	54(1),54 (compounding of offences) of W.P Act 1972	Difference between forfeiture and seizure were discussed.
23	Yakub Ali versus Deputy Director (WCCB) - Delhi High Court W.P(C) No.3782/2011.	Sec 43 (2) of W.P. Act 1972	Ownership of elephant on transit documents is illegal proposition.
24	Kalya Bawaria, Juhru, Ramjan, Tayib,Hiralal etc. VS Rajasthan Govt. (Alwar) - (1) ACJM (Alwar) and (2) ACJM(Rajgarh) etc.(Rajasthan)	Sec 9/51/49B/27/31/3, 9/29/48A/49A of W.P. Act 1972	Upheld the sanctity of the provisions of W.P. Act 1972. Even in appeal this was also upheld by District. Judge, Alwar.

25	Sansar Chand versus State Govt. of Rajasthan - Supreme Court of India.Cr. Appeal No.2024 of 2010	48 A/51 A(G) of Indian Constitution & Sec 9/51 of W.P. Act 1972	There is no absolute rule that an extra-judicial confession can never be the basis of conviction.
26	Govt. Of Rajasthan versus Naryan & others - Add. Chief judicial magistrate, Alwar	Sec-9/5/39/51 /48A/51/49B of W.P Act 1972	Accused was convicted but imprisonment was set off and simultaneously declared to be borne.
27	Indian Handicrafts Emporium & others verses Union of India - Supreme Court of India Civil appeal No. (7534-35/1997/2003)	40 A/49 C Wild Life (Protection) Act 1972	Petitioner went for appeal against confiscation but S.C supported for confiscation & dismissed the petition.
28	Addl. Sessions Judge - 01 (Central) Delhi. SC No. 42/2008 ID No. 401R0009792006 State (through CBI) VS Sansar Chand and others	Section 51 W.P. Act, 1972, 120 B IPC and Section 3 of MCOCA	Issues related to further investigation in complaint cases, filing of supplementary complaint in a complaint case and applicability of MCOCA provisions in complaint cases



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Wildlife Crime: Prosecution Hurdles

by Kiran Rahalkar | posted in: WCT Work |

Wildlife crime in India happens across a wide spectrum – from local village level subsistence hunting to multi-million dollar trade in the international market. The international trade in wildlife and related trafficking is perhaps the most noticeable, due to its international nexus with other contraband trade. Wildlife trade related crime is just one piece of the puzzle, there are various other aspects like the pet trade, poaching, hunting for subsistence, retaliatory killing, and the larger human-wildlife conflicts, as well as traditional, religious, and superstitious beliefs, which may go unnoticed and unassessed.

The herculean task to grant official protection to the wildlife of our country came to a head a year prior to the inception of Project Tiger. It was in 1972 that the Wild Life (Protection) Act (WLPA) came into force. It was and still is one of the most potent acts ever drafted, with a clear mandate to protect the wildlife and protected areas of our country. The purpose of the Act is stated in the long title, *'An Act to provide for the protection of [Wild animals, birds and plants]1 and for matters connected therewith or ancillary or incidental thereto with a view to ensuring the ecological and environmental security of the country.'*



The mere act of attempting to hunt can also be termed as hunting according to this Act. (Photo: Wildlife Conservation Trust)

It is very clear that this Act is intended not only to protect wild animals, birds, and plants, but also to ensure the ecological and environmental security of their habitats in India. It also means that the ecological and environmental services that are provided by wildlife are quintessential to the benefit of society at large. Even prior to 1972, there were acts and rules in place that tried to regulate hunting and other wildlife crimes. But the will to prioritize the protection of wildlife countrywide received the needed impetus with the enactment of the WLPA, this being the first act that laid emphasis on protection of wildlife rather than on regulations for hunting or other purposes.

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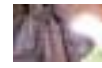
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The Wild Life (Protection) Act, 1972 is one of the most comprehensively drafted acts, which lays a lot of stress on protection of wildlife and prevention of crimes in the first place. Consider the definition of hunting from section 2, sub-section 16 of the Act. Here it says that 'every attempt to hunt is also considered at par with hunting', so an attempt to hunt also attracts the same punishment as actual hunting. Section 57 of this act, "Presumption to be made in certain cases", states that in such cases the burden of proof lies with the accused and not the prosecution. But despite all this, the conviction rate in wildlife crimes is terribly low. With such dismal conviction rates, there is little fear of the law in the minds of perpetrators of wildlife crime, encouraging them to commit more such crimes.



Wildlife Conservation Trust has till date conducted training for 12,000 frontline forest guards to increase their capacity in Wildlife Law Enforcement. (Photo: Kiran Rahalkar)

Law is one part of the story, while enforcement is another part that needs feet on the ground to implement. There are several issues with enforcement of the law, the first and foremost being the availability of staff. Is there enough staff to efficiently control the forest area? The answer is no. The sheer size of the area under forest jurisdiction makes it impossible for the staff to physically patrol. This gives people an opportunity to plunder natural forest resources, be it timber, non-timber forest produce, grass, or animals.

The site of occurrence of the crime is also a critical factor in deciding the prosecution outcome of a crime. Most wildlife crimes happen in remote locations, and the remoteness of the location ensures that detection of the crime is often delayed. This helps the accused, as most of the critical evidence which could establish their presence at the crime scene is lost. Evidence like footwear marks, tyre marks, and trace evidence like fabric fragments is lost by the time the forest department personnel arrive at the scene of the crime.

Another issue would be the likely absence of eyewitnesses at remote locations. Due to this, forest officials mostly rely on corroborative evidence, which may be deemed deficient in a court of law. The remoteness of the location also hampers proper processing of evidence, like the use of specific preservation techniques and freezing of perishable materials, resulting in the evidence that was painstakingly collected being rendered useless. In many cases, this is what happens to biological evidence like meat, blood, and hairs, which may lose credibility if not processed in the prescribed manner. Also, once the evidence is collected, the chain of custody is not maintained either, which may render it useless in a court of law.

Once the case reaches the court, there is an entirely different set of hurdles to encounter. All wildlife-related cases are criminal cases, and subject to delays. In case of Indian judiciary, these delays can often mean a couple of years to even start the hearing. The verdict in the case may even take decades to be pronounced, and that too in a lower court. Then there is still an option for the accused/convict to appeal in higher courts. This delay is often in favour of the accused, with witnesses turning hostile and evidence losing credibility. With such long delays, many cases even see dismissal with the key witness or the accused expiring.

The judiciary comes with its own set of challenges, as judges often tend to take a lenient view in case of wildlife crime. For them, the aggrieved party is a poor villager or tribal, rather than the wildlife that is killed. When there is lack of eyewitnesses, the benefit often goes to the accused rather than to the prosecution. At times, the applicable sections of the WLPA are not invoked, which also results in favouring the accused. Another major hurdle is the lack of intent shown by the government appointed public prosecutors. Most of them are overburdened with the sheer load of legal proceedings; hence wildlife-related cases don't come high on their priorities. Also, the majority of them lack knowledge of the provisions of this Act, and as a result, they fail to invoke specific provisions of the Act.



We need more such instances so that people will think twice before committing crimes against wildlife. (Photo: Maharashtra Forest Department, Melghat Tiger Reserve)

Considering these facts, we can envisage the kind of difficulties faced by the forest department in the prosecution of criminals. I did a small exercise whereby I tried to analyse the results of cases booked under the WLPA in district courts across Maharashtra. I reviewed 139 such cases over the last 10 years. Of these 139, only in nine cases were the accused convicted, whereas in all the other cases there were acquittals, or the case was dismissed. This is the kind of success rate that is achieved, despite the best efforts of the forest department. With such low rates of conviction, the morale of the staff also takes a beating. They often get discouraged from booking cases as they tend to see the proverbial writing on the wall.

Given the ground reality, the focus should not be on how to make the law stronger, but on proper crime investigation and watertight filing of cases. We will have to improve the capacity of the ground staff of forest departments to process the cases more efficiently. They need to be trained in the latest techniques of sample preservation, evidence collection, and maintaining the chain of custody of the evidence. The judiciary and the lawyers need to be sensitized about wildlife crimes, the circumstances under which such crimes take place, their severity, and the plight of wildlife at large. This is the make or break of wildlife crime prevention.

There is an urgent need to address this issue. Effective law enforcement is a tool for conservation, but often it is not viewed in that light. If we intend to change this, we need to tackle various aspects of wildlife crime across the spectrum.

This article was first published in the BNHS' Hornbill magazine, January-March 2019 issue.

Kiran Rahalkar is a wildlife biologist with the Wildlife Conservation Trust, working on matters related to wildlife crime prevention and law enforcement. He completed his Masters in Wildlife Biology and Conservation, from WCS-NCBS.

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Related Links

1. Balancing Interests (Humans & Animals)

- Human-Wildlife Conflict

Sr no.	Author	Paper	Summary	Purpose
1.	Akhileshwari Reddy, Anubhav Vanamalai, Shriyam Gupta, Dr Krithi Karanth (Vidhi Centre for Legal Policy co-authored with the Centre for Wildlife Studies) (2019)	Human-Wildlife Conflict in Karnataka: The need for a Human-Wildlife Conflict Compensation Law	An analysis of the current system of compensation, and a proposed law to bridge gaps. A Report that focuses on the need for a comprehensive Human Wildlife Conflict Compensation Law in Karnataka to increase transparency, efficiency and protect wildlife from retaliatory attacks for damages caused by them. Highlights no uniform national compensation policy in India and other lacunae and proposes a comprehensive legal framework – a Karnataka Human Wildlife Conflict Compensation Law – for the disbursal of compensation. The proposed law aims to increase the transparency of the compensation process in the state, and foster co-existence between [Karnataka's] wildlife and people.	The recommendations in this report are relevant for other states too as they don't have a comprehensive law currently and are depending on non-standardised orders.
2	WCS India (2021)	Mammal and bird species ranges overlap with armed conflicts and associated conservation threats	Human disturbances, including “war, civil unrest and military exercises” (all species: 1.4%) and agricultural activities (threatened species: 6.2%), were also more prominent among the conflict-overlapping suite of mammals ($p < 0.01$; Figure 4 and Table S3). By contrast, the prominence of threats from invasive species and disease, and climate change, was lower among conflict-affected mammals	Understanding wildlife in context of armed conflict and human rights law

			(– 1.8% to – 5.5%; $p < 0.01$), while other threats to mammals did not differ consistently based on overlap with conflicts during the focal period (Figure 4 and Table S3). Threats to birds from invasive species and disease, geological events (all species), and climate change (threatened species) were less prominent relative to other threats (– 0.3% to – 13.6%; $p < 0.01$) among bird species exposed to conflicts (Figure 4 and Table S3). Narrowing the comparisons to the tropics and subtropics (35°S–35°N) alone did not alter the above patterns (Table S3).	
3	Ambika Aiyadurai	‘Tigers are Our Brothers’: Understanding Human-Nature Relations in the Mishmi Hills, Northeast India https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_3b89e9deb55444b2a8e4c67e1099056e.pdf	Human-nature relations are diverse, multifaceted and often contradictory, especially the relationships with animals. Mishmi people living on the Sino-India border claim tigers to be their brothers and take credit for tiger protection as they observe taboos against hunting tigers	To understand cultural dimensions of Human-Animal conflict
4	Vidya Athreya	Monsters or Gods? Narratives of large cat worship in western India https://www.researchgate.net/publication/327829273_Monsters_or_Gods_Narratives_of_large_cat_worship_in_western_India	In this article we describe the belief in the presence of a large cat deity; Waghoba, which appears to be geographically widespread in western India and is still revered today. It is a very old cultural institution which according to many interviewees was at least many centuries old. The people had a deep belief that the large cat; a leopard	To understand cultural dimensions of Human-Animal conflict

			Panthera pardus or a tiger Panthera tigris or both, protected them.	
5	Saloni Bhatia et. all	Understanding People's Relationship With Wildlife in Trans-Himalayan Folklore https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_3ecfb4585508497e952c978cfe9e9ebf.pdf	Evidence suggests that religion is an important driver of peoples' attitudes toward nature, but the link between religion and carnivore conservation is poorly understood. We examined peoples' attitudes in Buddhist (n = 83) and Muslim communities (n = 111) toward snow leopards (Panthera uncia) and wolves (Canis lupus) in Ladakh, India	To understand cultural dimensions of Human-Animal conflict
6	Kai M. A et. all	Where are Cultural and Social in Ecosystem Services? A Framework for Constructive Engagement https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_8878dc622db54d84b225267947da04e8.pdf	A focus on ecosystem services (ES) is seen as a means for improving decision-making. In the research to date, the valuation of the material contributions of ecosystems to human well-being has been emphasized, with less attention to important cultural ES and nonmaterial values. This gap persists because there is no commonly accepted framework for eliciting less tangible values, characterizing their changes, and including them alongside other services in decision making	To understand cultural dimensions of Human-Animal conflict
7	Dhee et. all	The leopard that learnt from the cat and other narratives of carnivore-human coexistence in northern India https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_f99215db19c440648aeb5bdf4562714f.pdf	This study explores the diversity of factors that influence human-leopard relationships in Himachal Pradesh, India. Looking beyond the socio-economic and ecological dimensions of human-leopard conflict, it documents the multifaceted nature of human-wildlife relationships	To understand cultural dimensions of Human-Animal conflict
8	Chloe Inskip	Toward Human-Carnivore Coexistence: Understanding	Fostering local community tolerance for endangered carnivores, such as tigers (Panthera	

		Tolerance for Tigers in Bangladesh https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_4ffbabc22f264a129a98f5f04bcd81.pdf	tigris), is a core component of many conservation strategies. Identification of antecedents of tolerance will facilitate the development of effective tolerance-building conservation action and secure local community support for, and involvement in, conservation initiatives	
9	Kumar, N	Human-attacks by an urban raptor are tied to human subsidies and religious practices https://www.nature.com/articles/s41598-019-38662-z.pdf	Growing urbanization is increasing human-wildlife interactions, including attacks towards humans by vertebrate predators, an aspect that has received extremely scarce investigation. Here, we examined the ecological, landscape and human factors that may promote human-aggression by raptorial Black kites <i>Milvus migrans</i> in the 16-millions inhabitants megacity of Delhi (India)	
10	Mark Infield , Abigail Entwistle , Helen Anthem , Arthur Mugisha and Kathryn Phillips	Reflections on cultural values approaches to conservation: lessons from 20 years of implementation https://www.cambridge.org/core/journals/oryx/article/reflections-on-cultural-values-approaches-to-conservation-lessons-from-20-years-of-implementation/E3322C4DC865F2D2A4588DEA6393E359	The natural environment underpins human well-being in diverse and complex ways, providing both material and non-material benefits. Effective conservation requires context-specific understandings of human interactions with, and conceptions of nature.	
11	Michael J Manfredo	Bringing social values to wildlife conservation decisions https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_2a338d	Humans regularly exert a powerful influence on the survival and persistence of species, yet social-science information is used only sporadically in conservation decisions. Using data obtained from a survey of 46,894 US residents, we developed and	

		4b97b64bafb60b57305cfaf6cb.pdf	applied a spatially explicit “sociocultural index” to inform decision making through an understanding of public values toward wildlife.	
12	Hannah Parathian E.	Breaking Through Disciplinary Barriers: Human–Wildlife Interactions and Multispecies Ethnography https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_b228b0dec3214ffd841087e555b57f6f.pdf	One of the main challenges when integrating biological and social perspectives in primatology is overcoming interdisciplinary barriers. Unfamiliarity with subject-specific theory and language, distinct disciplinary-bound approaches to research, and academic boundaries aimed at preserving the integrity of subject disciplines can hinder developments in interdisciplinary research.	
13	Geeta Seshamani and Kartick Satyanarayan, (Wildlife SOS) (1997)	Chapter 9. Licensing and the Law, The Dancing Bears of India p. 28-30 Chapter 11 Conclusion, The Dancing Bears of India p. 35-38	To study the efficacy of state and national Laws as they exist on paper and as they are actually implemented, regarding the poaching of the cubs, the method of licensing which permits purchase, transportation and the dancing of the cubs.	Understanding confrontation between Bear owner and the Law; WildLife Protection Act, 1972, (with amendments.); State Laws / Municipality / Forest Officers/ Police.
14. (Article)	Cara Tejpal Sanctuary Asia, Vol. 38 No. 12, December 2018	State vs Elephas Maximus	PIL breakdown Prerna Bindra v Union of India	Context of PIL jurisprudence in India for human-elephant conflict
15.	Biological Conservation Volume 260, August 2021, 109216	The political economy of human-wildlife conflict and coexistence https://www.sciencedirect.com/science/article/pii/S0006320721002688	Researchers have highlighted a conspicuous dearth of analysis focused on political-economic structures and processes in the rapidly expanding literature exploring human-wildlife conflict and coexistence. In this paper, we respond by highlighting the importance of attending to the influence of such dynamics in understanding and addressing both conflict and coexistence in human-wildlife interactions in particular locations and well as across levels and scales	

- Human Wildlife Conflict outside the Indian subcontinent:

1	Lauren A Evans et. all	Elephants as actors in the political ecology of human–elephant conflict https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc1646098f399bfe4a89b2e63e83efe0b7bd.pdf	This paper examines the agency of African elephants as important actors in the political ecology of human–elephant conflict, and in shaping the politics of land in post-colonial Kenya.	To understand cultural dimensions of Human-Animal conflict
2	Fikirte Gebresenbet et. all	A culture of tolerance: coexisting with large carnivores in the Kafa Highlands, Ethiopia https://www.cambri-dge.org/core/journals/oryx/article/culture-of-tolerance-coexisting-with-large-carnivores-in-the-kafa-highlands-ethiopia/F3ABFD5C2FD5B224AAF55F2DAA022105	We assessed losses of livestock to lions <i>Panthera leo</i> and leopards <i>Panthera pardus</i> in the Adiyo and Gimbo districts in Kafa Biosphere Reserve, Ethiopia. We quantified the economic impact, conducted household and group interviews, and explored potential solutions with local people. During 2009–2013 there were 350 and 62 attacks by lions and leopards, respectively. Households that suffered attacks on their livestock lost a mean of USD 287 and USD 310 in 2012 and 2013, respectively	To understand cultural dimensions of Human-Animal conflict
3	Mara J et. all	Beyond ritual and economics: Maasai lion hunting and conservation politics https://www.cambri-dge.org/core/journals/oryx/article/beyond-ritual-and-economics-masai-lion-hunting-and-conservation-politics	Populations of the African lion <i>Panthera leo</i> are declining dramatically, with the species' survival in some areas closely linked to levels of tolerance	

		d-ritual-and-economics-maasai-lion-hunting-and-conservation-politics/5872D7AE49E17FB99A13BDC9D9657A8D	by rural communities. In Tanzania and Kenya several of the remaining lion populations outside protected areas reside adjacent to rural communities, where they are hunted.	
4	A. Clare Gupta	Elephants, safety nets and agrarian culture: understanding human-wildlife conflict and rural livelihoods around Chobe National Park, Botswana https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc1600d7872b4af24b68822aa3436c35e886.pdf	This article chronicles the livelihood strategies of smallholder farmers in the village of Naledi2 on the edge of Chobe National Park in northern Botswana (Figure 1). Here, the presence of wildlife weighs heavily on peoples' lives	
5	Jeanne E. McKay	Tolerating tigers: Gaining local and spiritual perspectives on human-tiger interactions in Sumatra through rural community interviews https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc1653f233114a9d443c829bf220c64335c8.pdf	Religious beliefs and spiritual connections to biodiversity have the potential to reduce animosity towards wildlife that might otherwise present a real or perceived threat to local people. Understanding this social dynamic can therefore be important for formulating locally-appropriate species-specific conservation strategies.	

6	Simon Pooley	A Cultural Herpetology of Nile Crocodiles in Africa https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc16_35aa9bb7393542bdb52ecd61dfc8300a.pdf	Human-wildlife conflict is a growing problem worldwide wherever humans share landscapes with large predators, and negative encounters with eight species of the crocodilians is particularly widespread. Conservationists' responses to these adverse encounters have focused on the ecological and behavioural aspects of predators, rather than on the social, political, and cultural contexts, which have threatened their existence in the first place.	
7	Erin P. Riley	The importance of human-macaque folklore for conservation in Lore Lindu National Park, Sulawesi, Indonesia https://www.cambridge.org/core/journals/oryx/article/importance-of-human-macaque-folklore-for-conservation-in-lore-lindu-national-park-sulawesi-indonesia/6481608E341AB027817DBB81F3EF91D0	The emerging field of ethnoprimateology focuses on the conservation implications of ecological and cultural interconnections between humans and other primates. The ethnoprimateological research reported here examined how the Tonkean macaque <i>Macaca tonkeana</i> is situated in the folklore of villagers in Lore Lindu National Park, Sulawesi, Indonesia. Data were collected using ethnographic interview techniques.	
8	Rust, N. A., J. Tzanopoulos	Why Has Human-Carnivore Conflict	Human-wildlife conflict has	

		Not Been Resolved in Namibia? https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc167108d1071e2a46a4ba61aff1530fbc42.pdf	historically been portrayed as a management problem where solutions lie in technical changes or financial incentives. However, recent research shows many conflicts stem from social, economic, and political drivers	

- Right to Forests (Forest Rights Act, 2006)

Sr no.	Authors	Name	Summary	Purpose
1.	Legal Brief II Centre for Environmental Law (CEL), at WWF – India (2016)	NEW STATE VILLAGE FOREST RULES	Are Madhya Pradesh and Maharashtra redefining participatory forest management in India?	The Legal-historical Context Of Village Forests- The National Forest Policy, 1988, followed by the introduction of Joint Forest Management (‘JFM’) in 1990, sought to introduce a departure from the centralized approach of the Indian state to forest management ¹ to a more participatory one. Following the adoption of the central JFM Resolution by states in the 1990s and into the first decade of this century, the adoption of the Panchayats (Extension to Scheduled Areas) Act, 1996 and the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act (‘FRA’) in 2006, the policy and legal framework for recognition of rights of the forest-dwelling and forest-dependent communities seemed to have been put in place.
2	Sharachchandra Lele, Ashish Kothari, Roma, Arupjyoti Saikia, Ravi Rebbapragada, Vasavi Kiro, Jarjum Ete ATREE Economic &	Misreading the Issues and the Landscape (Critique of Protecting India’s Protected Areas)	This response to the comment “Protecting India’s Protected Areas” by Praveen Bhargav and Shekar Dattatri (23 April 2011) points out the authors’ misreading of the Forest Rights Act and also of the report of the Joint Committee	The different perspectives (Summary of original article- The Saxena Committee’s recipe for redressing historic injustices to forest dwellers will precipitate an ecological crisis.)

	Political Weekly EPW May 28, 2011 Vol. xlvi No. 22 (Critique of Praveen Bhargav and Shekhar Dattatri April 23rd issue of Economic and Political Weekly)		on the FRA.	
3	Ajit Menon Law, Land Use and the Environment, Afro-Indian Dialogues, Pondichéry, Institut Français de Pondichéry, 2007, 549 p (363-387)	Situating Law: Adivasi Rights and the Political Economy of Environmen t and Developme nt in India	The recent controversial debates and eventual passing of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Bill, 2006 (hereafter the STB), which was originally aimed at providing adivasi people rights to forest land already occupied by them and access to forest produce for livelihood purposes, not only highlights the struggles that surround the passing of protective social legislation but, equally importantly, the vagaries of law as a possible instrument through which meaningful social change (that recognizes adivasi 'customary' claims to land) can be initiated.	The arguments put forward are largely based on a re-reading of existing laws and legal decisions as well as on analyses of environmental law that address social rights in particular, with a view to opening up a more broad-based dialogue between legal scholars and social scientists pertaining to the socio-economic and political dimensions of law.
4	Madhuri Krishnaswamy Economic and Political Weekly Vol. 40, No. 47 (Nov. 19-25, 2005), pp. 4899-4901 (3 pages)	One Step Forward, Two Steps Back	The proposed Scheduled Tribes Bill promises a great deal but in effect delivers very little. The bill's recognition that a new law is necessary to correct the "historical injustice" rendered to adivasis is a welcome step. But in its current	

			form, the bill appears inadequate; loopholes in its provisions might deny several among the current forest dwellers, their legitimate rights. Meanwhile, there are also plans to dilute the bill further under pressures from the environment ministry and wildlife pressure groups.	
5 (Article)	K. Ullas Karanth, Praveen Bhargav Seminar, Aug 2005, Iss 552	Defragmenting nature	THE three proclaimed goals of the proposed law, ‘Scheduled Tribes (Recognition of Forest Rights) Bill’ – the bill hereafter – are: To redress past social injustices perpetrated against forest dwelling tribal people, to improve their socio-economic conditions, and to protect India’s natural biodiversity under a new conservation paradigm rooted in the traditional ecological wisdom of the tribal people.	Differing perspectives
6	By Chiradeep Basak, Abhishek Chakravarty Published: Tuesday 15 June 2021	Tribal hunting rights vs wildlife protection laws: Is there a middle ground? https://www.downtoearth.org.in/blog/wildlife-biodiversity/tribal-hunting-rights-vs-wildlife-	A recent news report published by Down to Earth revealed the killing of over 200 wild animals in West Bengal’s Janglemahal forest area by the local tribal population. The animals were killed as part of the centuries-old annual hunting season observed by Adivasis known as Shikar Utsav. There are two opposing views on the issue — while one part supports it as a traditional customary	

		protection-laws-is-there-a-middle-ground--77462	ritual of indigenous people, others oppose it in the name of wildlife conservation and animal rights.	

- National Zoo Policy, 1998, Recognition of Zoo Rules, 2009

Sr no.	Author	Paper	Summary	Purpose
1.	Alyna Bharat and G. Poyyamoli (Zoos Print Journal)	Captive Breeding and Zoo Policy in India: Lessons from Arigner Anna Zoological Park		
2.	Yamini Narayanan, Sumanth Bindumadhav	Posthuman cosmopolitanism' for the Anthropocene in India: Urbanism and human-snake relations in the Kali Yuga	India's rapid urbanization and biodiversity decline together have critical global implications in the Anthropocene. However, the complex socio-religious dimensions of urban biodiversity are overlooked in current planning. This paper casts animals as vital components of urban societies in India to argue for species-inclusive zoöpolises as viable cities of the future. It proposes 'posthuman cosmopolitanism' as a planning ethic that extends pluralism to multispecies in the Anthropocene, cognisant of the socio-cultural and religious frames in which animals are enmeshed in India. These narratives have significant implications in the Kali Yuga or the apocalyptic cosmological epoch, which Hindus believe is currently underway. Akin to the Anthropocene, human action bears an exceptional significance in the events of the Kali Yuga, which is believed to be a precursor to human, ecological, and even planetary annihilation. The paper examines human-snake conflict, one of the most widespread human-animal encounters in Indian cities. Snakes play vital roles in urban ecologies and religio-cultural narratives in	

			India. Simultaneously, religious and social perceptions of serpents contribute to a fear of snakes. Fundamental to snake preservation in the Indian urban Anthropocene is an expansion of diversity to ‘multinatural diversity’ and a reconfiguration of human-snake relations in socio-cultural frames.	
3.	Raza Kazmi		The story of lions in the present-day north Indian state of Haryana from 1809 to their extinction in the region. This first part shall present many previously undocumented lion sightings and shooting records from Haryana and its environs, and in the process follow the trajectory of the collapse of lion populations in the region, right until their eventual extinction from this landscape. The upcoming Part II of the paper shall present a picture of the lion habitats and ecology in Haryana as described in archival sources, cultural interaction of the species with the local communities, aspects of lion behavior, especially when cornered during hunts, and finally an analysis of the possible factors responsible for the lion’s extirpation from these territories. Part II shall also look in detail at the very interesting subject of co-occurrence of tigers and lions in the same landscape in the Haryana territories during the opening decades of the 19th century, a subject which will be only briefly touched upon in this first part.	

- Wildlife Corridors

Sr no.	Author	Paper	Summary	Purpose
1.	Shyama Kuriakose (Vidhi Centre for Legal Policy)	Supreme Court on Wildlife Conservation: Kaziranga-Karbi Anglong Landscape	Judgments on the conservation of the Kaziranga-Karbi Anglong Landscape in Assam.	Consistent usage of environment principles in wildlife conservation

2.	Raghav Srivastava and Richa Tyagi (WWF-India) Environmental Law Review 2016, Vol. 18(3) 205–223	Wildlife corridors in india: Viable legal tools for species conservation?	Wildlife corridors, used by various species to migrate, breed and feed, are increasingly becoming relevant as essential tools for wildlife conservation. Rapid increase in industrial and infrastructural development, especially around forests, has resulted in widespread habitat fragmentation and isolation. Added to this, the growing development (for tourism, linear infrastructure etc.) around protected areas, and the altered de facto boundaries of these, have exacerbated this need. There is, however, no ‘hard’ statutory recognition afforded in India to wildlife corridors in spite of their established relevance in ecological conservation. Nor is there a strict prohibition on development within, and around important corridors in India. Even so, wildlife corridors have found passing mention in certain conservation law and guidelines framed thereunder, which seek to protect wildlife habitat and reduce human – wildlife conflict. These extant legal spaces have largely proved ineffective in the protection and conservation of corridors, and corridor protection and management continues to be a dormant legal space in India.	This paper seeks to analyse the various barriers to corridor conservation and management, and whether the existing legal measures are underutilised in providing legal protection to wildlife corridors, without the need of a parallel institutional framework. Through an understanding of the criticality of corridors to wildlife conservation, the adequacy of existing legal structures has been examined by the authors, and recommendations made for augmenting the current legal framework with more concrete strategies.
3	Legal Brief I, Centre for Environmental Law (CEL), at WWF – India (2016)	Legal Spaces For Wildlife Corridors	Wildlife corridors in India are under severe threat from social and economic demands. Growing pressure from linear infrastructure, irrigation, mining, and human habitats, have pushed most natural spaces into islands and fragmented corridor spaces between source areas. A primary concern for corridor management is the growing linear infrastructure network in the country, particularly in light of the recent push to ease the environmental clearance process.	Exploring legal spaces for corridor protection as ESZs, Community Reserves, Conservation Reserves, Community Forest Resources, and Biodiversity Heritage Sites.
4. (Article)	Milind Pariwakam Sanctuary Asia, June (2019).	Whose Right of Way	Forests, wetlands, rivers, lakes, mangroves and shores are infrastructure in their own right, with major, but often hidden, economic benefits. Identifying such vulnerable	Working toward policy and landscape scale solutions. While the WCT policy framework

			assets in advance, would enable project proponents to incorporate mitigation measures that satisfy both, conservation and infrastructure goals.	refers to Central India and the Eastern Ghats, the principles can be adapted and applied to other critical landscapes, across biogeographic zones.

2. Domestic Wildlife Protection Laws

- The Wildlife (Protection) Act, 1972; Wildlife (Protection) Rules, 1995, National Board for Wildlife

Sr no.	Authors	Name	Summary	Purpose
1.	Mridhu Tandon and Dr Rakesh Singh (LIFE Policy Papers)	Analysis of Wildlife Clearances 2019 July 2020 Vol II No. 2	Wildlife clearances granted by the Standing Committee of the National Board for Wildlife under the provisions of Wildlife (Protection) Act, 1972	To better understand the extent of diversion within Protected Areas as well as areas where such diversions have taken place. Lawyers, conservationists, wildlife managers, decision makers and media to have a comprehensive overview of threats to the Protected Area network in the country.
2	Debadityo Sinha and Mridhu Tandon (Vidhi Centre for Legal Policy)	Safeguarding Wildlife Beyond Protected Areas In India: A Review Of Laws, Policies And Other Conservation Tools	PAs are important tools to withstand the impacts of climate change and ensure long term conservation of natural resources providing food, clean water, shelter and income. However, they have their own limitations on account of their relatively small size and that the majority of wildlife habitats are now found outside the PAs. This accounts for the imperative need of according protection and identification of wildlife corridors and habitats outside the PAs. The article discusses the different forms of wildlife habitats and conservation areas found outside the PAs and how the	India, a country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals. Wildlife in India is protected through protections granted to species as well as declaring an area as Protected Area (PA) under the Wildlife (Protection) Act, 1972 such as Wildlife Sanctuaries and National Parks.

			existing laws and government actions lack in vigor and pose hurdles in effectively protecting forests and wildlife.	
3	Neema Pathak Broome, Shalini Bhutani, Ramya Rajagopalan, Shiba Desor, and Mridula Vijairaghavan Natural Justice in Bangalore and Kalpavriksh in Pune and Delhi (2012)	An Analysis Of International Law, National Legislation, Judgements, And Institutions As They Interrelate With Territories And Areas Conserved By Indigenous Peoples And Local Communities	Country, Communities And Community Conserved Areas, Land, Freshwater And Marine Laws And Policies, Protected Areas, Community Conserved Areas And Sacred Natural Sites, Judgements, Implementation, Resistance And Engagement, Legal And Policy Reform, Other Kinds Of Support Required By ICCAs, 7 Case Studies across India	Comprehensive Report on all Indian and international laws relevant to wildlife conservation.
4	Shibani Bose, Oxford University Press (2020). © Oxford University Press. DOI: 10.1093/oso/9780190120412.001.0001.	Mega Mammals in Ancient India	History as a chronicle of human activity is as old as the hills, the saying goes. Yet, history of the environment and other life forms we share our planet with is a recent phenomenon. The toll taken by the industrial revolution, imperial formations, and the two world wars on humans and the environment was no doubt the impulse that led to the rise of the new genre of historical writing in the second half of the twentieth century. Since other life forms cannot communicate their experience of anthropomorphic depredations, we have only our perceptions of what happened and what is happening to them and their habitats. The author traces the past distribution of the three animals through faunal remains, proto-historic artefacts, and historical literature up to c. 300 ce. A detailed analysis of the	Historic context to cultural trails of the three mega mammals in ancient India: elephant, rhinoceros, tiger. Today we have Project Elephant and Project Tiger and corridors identified under these.

			proto-historic finds and historical literature illustrates the intimate knowledge the ancient world had of these three species. For example, the solitary character of the rhinoceros, references to musth in elephants, and the touching interrelationship between the tiger and forests, where one could not last without the other, are but a few illustrations. Even today, this is startlingly so. The impulse to save the tiger in India by initiating Project Tiger in 1972–3 is the evidence. Can one imagine the protection of the tiger without its habitat? By integrating a range of sources, Bose has been able to draw a kaleidoscopic picture of the forests and grasslands of early north India, which by itself is of crucial importance. Bose's survey of ancient Indian literature highlights numerous interactions between lions and elephants. Equally thought-provoking are descriptions and comparisons between the lion and tiger, where the former usually emerges the better off. Lions and elephants must have shared common landscapes to evoke such frequent attention in Indian literature.	

- Biological Diversity Act, 2002; National Biodiversity Authority

Sr no.	Authors	Name	Summary	Purpose
1.	Kannan, R., C. Shakelton, R. Umashanker ATREE Current Science 104 (9): 1159-1165.	Playing with the forest: invasive alien plants, policy and protected areas in India	It is realized that the threat to biodiversity by invasive alien species (IAS) may only be second to that of	The paper argue that if we are to protect our PAs from the serious scourge of invasive species, we would have to

			fragmentation.	relook at the policy governing PA management and revise it to be more inclusive than exclusive.
2	Kamaljit S. Bawa, Nitin D. Rai, and Navjot S. Sodhi Conservation Biology Volume 25, No. 3, 639–641 (2010)	Rights, Governance, and Conservation of Biological Diversity		
3	Joanna M. Setchel	Biosocial Conservation: Integrating Biological and Ethnographic Methods to Study Human–Primate Interactions https://428a9490-8cd7-406a-873f-6ada42789f4a.filesusr.com/ugd/7acc165ab215fdab8d4c158f94fc331204c132.pdf	Biodiversity conservation is one of the grand challenges facing society. Many people interested in biodiversity conservation have a background in wildlife biology. However, the diverse social, cultural, political, and historical factors that influence the lives of people and wildlife can be investigated fully only by incorporating social science methods, ideally within an interdisciplinary framework	
2. (Article)	Ashoka Trust for Research in Ecology and the Environment (ATREE)	The holy book and the sacred list: the IUCN's Red List for prioritizing species for protection is beset by serious flaws.		Understanding IUCN Red List in context of WLPA Schedules
3. (Article)	The Hindu, ATREE	Workshop for government officials on Biological Diversity Act		Implementation of the Act by the National Biodiversity Board
Article	Lianne D'Souza, Research Fellow, CEERA – Jayanti Jaya, 3rd year Law	Coastal Regulation Zone Management And The Grant Of		Understanding case laws under the Biodiversity Act.

	Student, NLU Odisha	Post Facto Clearances: The Case Of Vanashakti & Anr. V. Uoi & Ors.		
Article	Ms. Lianne D’Souza, Research Fellow, CEERA Ms. Alekhya Sattigeri, Law Student, ULC, GGSIPU	Tracing The Environmental Framework For Bottom Trawling	The deep sea is home to a variety of endemic and benthic biodiversity, bottom trawling ushered in commercial benefits compared to fishing in shallow water off the coast.	Using legal framework beyond WLPA to protect biodiversity.
4. (Article)	NLSIU CEERA Biodiversity and ABS	International Day for Biological Diversity 2021: Date, theme, significance and quotes	Understanding the theme "We're part of the solution" is the theme for this year	The Biological Diversity Act, 2005 is the national legislation under CITES.
5. (Article)	NLSIU CEERA Biodiversity and ABS	List of Important Judgments by the Supreme Court (4), High Courts (5) and National Green Tribunal (15) and Case Notes on 1. Central India AYUSH Drug Manufacturers Association v. State Of Maharashtra (2016) 2. Social Action For Forest And Environment v. Union Of India, (W.P.(C) 12517/2018 & CM APPL. 48579/2018) 3. Monsanto Technology Llc And Ors Vs Nuziveedu Seeds Ltd. And Ors. (2019), Civil Appeal Nos. 4616-4617 of 2018	Important case laws for Biodiversity and ABS (Access and Benefit Sharing) in India	Understanding the application and context of the Central and State Biological Diversity laws by the courts.

		(PDF) Legal pluralism in the marine fisheries of Ramnad District, Tamil Nadu, India. IDPAD		
		https://www.atree.org/projects/tracking-ecological-and-cultural-impacts-biological-invasions-biodiversity-hotspot		
6.	Madhav Gagdil (Journal of Bio sciences)	India's Biological diversity Act, 2002: An Act for the new millennium		
7.	Krishnamoorthy Venkataraman, Zoological Survey of India (Asian Biotechnology and Development Review)	Access and Benefit sharing and the Biological Diversity Act of India: A progress report		
8.	Gitanjali Nain Gill, Nupur Chowdhary, Nidhi Srivastava	Biodiversity and the Indian Judiciary: Tracing the Trajectory		
9.	K. D. Prathapan, Priyadarsanan Dharma Rajan, T. C. Narendran, C. A. Viraktamath, K. A. Subramanian, N. A. Aravind and J. Poorani (Current Science Association)	Biological Diversity Act: Shadow of Permit-raj over research		

3. Wildlife Trade:

- Introduction to crimes and illegal trade in India.
- Legal and illegal wildlife trade
- Wildlife Trade: International Treaties

Sr no.	Authors	Name	Summary	Purpose
1.	Mridula Vijairaghavan, Sahila Kudalkar WCS-India	The Illustrated Wildlife Trade Investigation Guide	Agencies Involved In Tackling Wildlife Crime, Supporting Legislations To Tackle Wildlife Crime, Detection & Investigation, Wildlife Offence Report(Wlor) & Judicial Custody, Investigation Post Wlor, Complaints, Prosecution, Post Trial Action, Common Offences In Wildlife Trade.	Completely-pictorial, non-textual guide for lawyers to understand wildlife trade in India and how-to guide for supporting law enforcement.
2. (Article)	Cara Tejjpal First published in Sanctuary Asia, Vol.35 No. 12, December 2015	Chasing Chacha: How India's most notorious tiger-parts trader since Sansar Chand was caught	Wielding The Law - A brief interview with Special Counsel Kartik Shukul (also refer to Samir Sinha's The Wildlife Crime Nexus First published in Sanctuary Asia, Vol. 33 No. 6, June 2013)	Context on wildlife crime in Indian courtrooms.
3. (Article)	Samyukta Chemudupati (Wildlife Conservation Trust, 2019)	Illegal Wildlife Trade: The Need to Look Within		

4. Prosecuting Wildlife Crimes:

- Forensic science and wildlife
- Prosecution in wildlife cases
- Securing convictions in wildlife crimes

Sr no.	Authors	Name	Summary	Purpose
1	Duangchantrasiri, S.;Umponjan, M.;Simcharoen, S.;Pattनावibool, A.;Chaiwattana,	Dynamics of a low-density tiger population in Southeast Asia in the context of	Recovering small populations of threatened species is an important global conservation strategy. We demonstrate the value of	This comparative study suggests that population recoveries of low-density tiger populations may be slower than anticipated by

	S.;Maneerat, S.;Kumar, N.S.;Jathanna, D.;Srivathsa, A.;Karanth, K.U. (Conservation Biology 2016)	improved law enforcement	photographic capture-recapture methods for assessments of population dynamics in rare and elusive species that are identifiable from natural markings. Possibly because of poaching pressure, tiger densities at Huai Kha Khaeng were 82–90% lower than in ecologically comparable sites in India. However, intensified patrolling effort after 2006 appeared to reduce poaching, correlated with marginal improvement in tiger survival and recruitment. .	current global strategies hoping to ‘double’ wild tiger numbers in a decade.
2. (Article)	Kiran Rahalkar BNHS’ Hornbill magazine, January-March 2019	Wildlife Crime: Prosecution Hurdles	Effective law enforcement is a tool for conservation, but often it is not viewed in that light. If we intend to change this, we need to tackle various aspects of wildlife crime across the spectrum.	The Wild Life (Protection) Act, 1972 is one of the most comprehensively drafted acts, which lays a lot of stress on protection of wildlife and prevention of crimes in the first place. But despite all this, the conviction rate in wildlife crimes is terribly low. With such dismal conviction rates, there is little fear of the law in the minds of perpetrators of wildlife crime, encouraging them to commit more such crimes.
3. (Article)	Rizwan Mithawala Sanctuary Asia (2019)	Averting Extinction – One Blood Sample at a Time		Legal capacity building and implementation: Forensic and wildlife

Notes:

- **Acts and Rules:**

1. National Zoo Policy or International Zoo Policies or Central Zoo Act
<http://www.cza.nic.in/page/en/national-zoo-policy-1998>

2. Biodiversity Act or National Biodiversity Rules/Board
http://www.nbaindia.org/uploaded/act/BDACT_ENG.pdf

- **Approach**

-Law Enforcement

-Regulatory Bodies

-Project or Schemes of the Government

- **Intended Audience**

-Lawyers and academics

-Other professionals, activists or allied like biologists, conservationists

