ROAD MAP FOR ACTIVE MANAGEMENT OF Tigers In India

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

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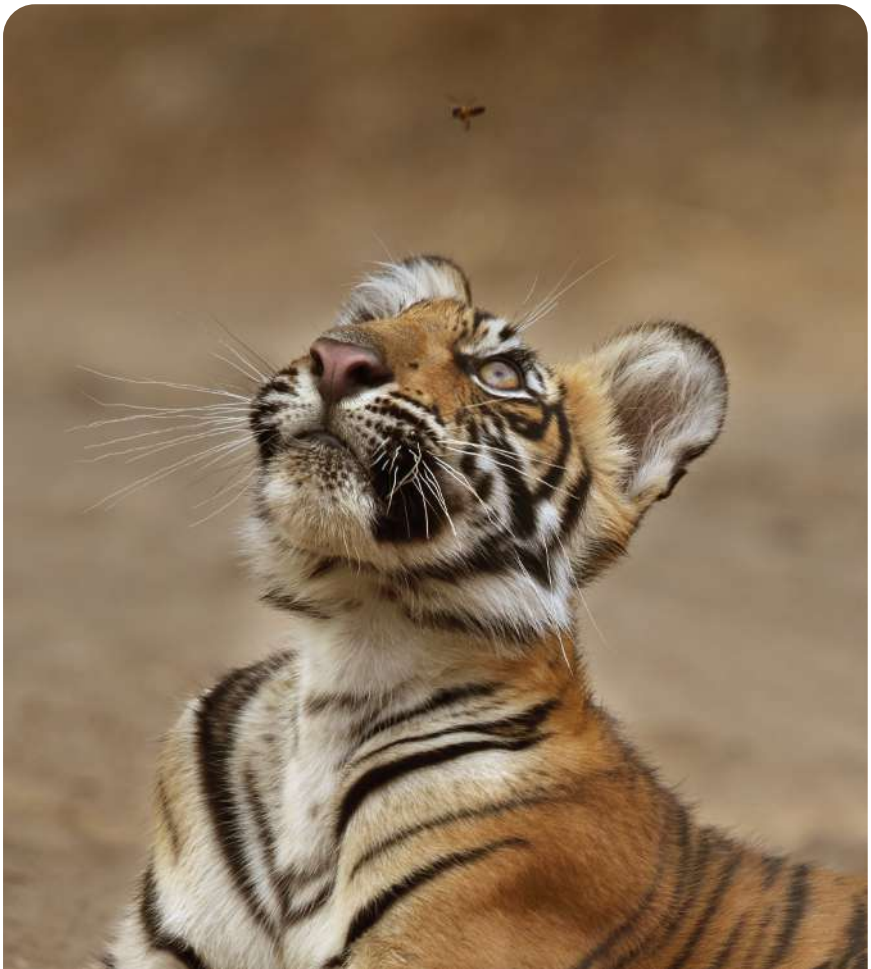

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PREFACE

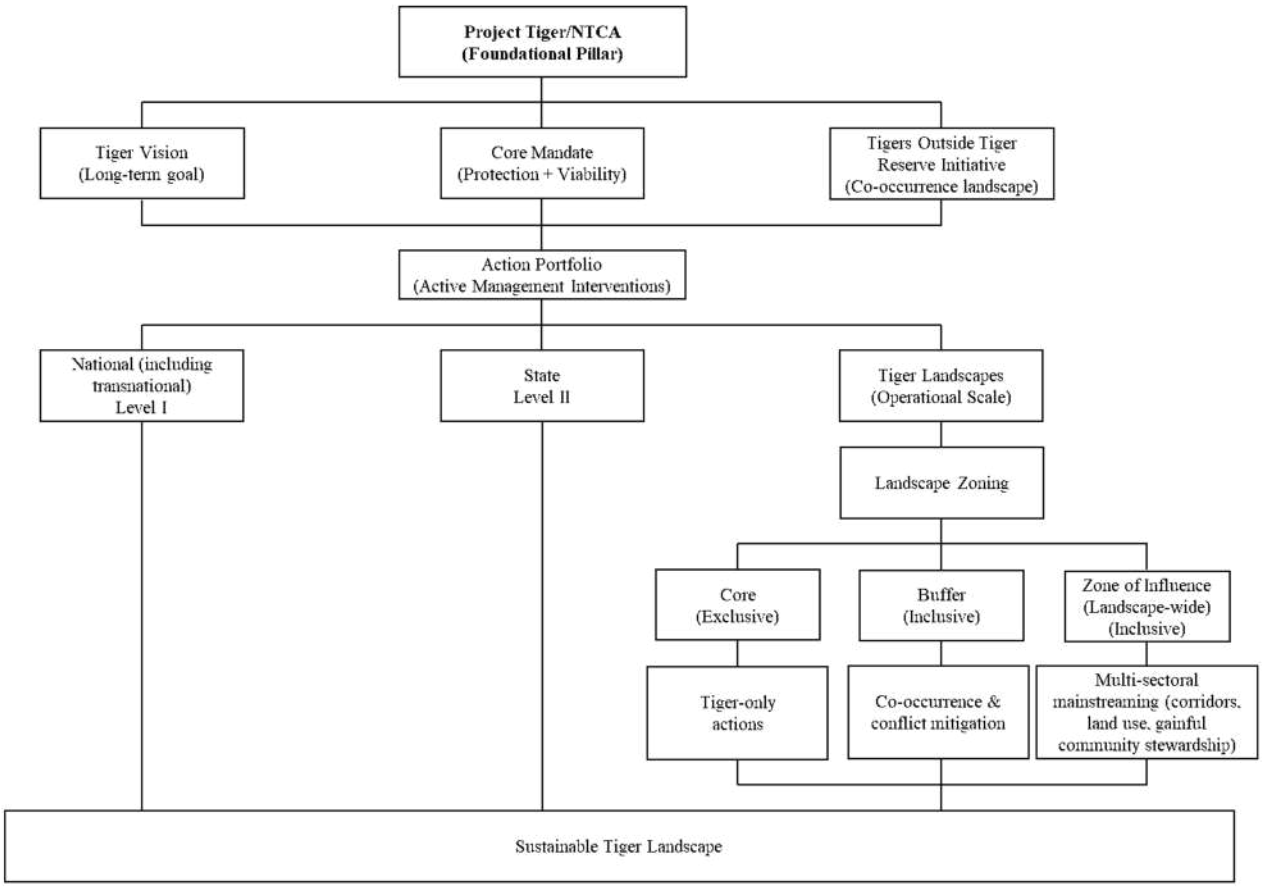
India has a long-standing track record of pioneering *in-situ* conservation of wild tigers for over five decades. This is an unparalleled conservation effort in terms of scale and actions. As a great testimony to the passionate, collective responsibility between centre and tiger states, India is in a leadership position on the tiger front with the maximum number of tiger reserves and tigers globally. This conservation journey has been a learning process as well, with codification of several good practices emanating from tiger reserves. Securing an assured future for a tenurial species of metapopulation like the tiger in landscapes subjected to ongoing agro-pastoral stress, natural resource dependency and development agenda is a formidable task.

Wild tiger conservation strategy is a combination of 'land sparing' and 'land sharing'. The National Tiger Conservation Authority (NTCA) in tune with the national legislation on wildlife and Project Tiger guidelines has innovatively strategized an exclusive tiger agenda for core areas of tiger reserves, complemented by an equally aggressive, inclusive co-occurrence agenda in the buffer and beyond. Envisioning interface actions, preventive and control with gainful community stewardship are hallmarks of this unique strategy which also takes into account the functionality of tiger corridors.

What is Active Management?

Active Management of wild tigers refers to a deliberate, time-bound, science-based, and adaptive approach to conservation that actively intervenes where necessary to secure long-term population viability, ecological functionality, and addressing the human-wildlife co-occurrence agenda. It is not restricted to the manipulation, augmentation, translocation, or reintroduction of tiger populations alone. Rather, it encompasses a comprehensive suite of legal, institutional, ecological, social, technological, financial, and governance interventions undertaken across scales, from national policy frameworks and state-level enabling mechanisms to landscape-level habitat management and community stewardship. Active management seeks to address contemporary conservation challenges including habitat fragmentation, loss of connectivity, human-tiger interactions, climate change impacts, disease risks, poaching threats, and developmental pressures. The approach recognizes that sustaining viable tiger populations requires simultaneous investments in protection, habitat and prey recovery, genetic security, landscape connectivity, conflict prevention, community engagement, green development, transboundary cooperation, research, and capacity building. In essence, active management is a proactive and adaptive conservation framework aimed at ensuring the long-term ecological sustainability of tigers and their landscapes while balancing the needs of people and development.

Framework for Active Management of wild tigers in India



Project Tiger/NTCA as the top anchor in the context, will have the mandate for enabling, legal, institutional and financial backbone to ensure science-based tiger conservation in sync with the mandate in vogue. Strategic linkages are required with the 'Tiger Vision' for long term ecological sustainability, genetic security, landscape connectivity, and recently launched 'tigers outside tiger reserves' -TOTR (for acceptance in management of tigers in human-dominated, subsidized landscapes.

Active Portfolio: Level specific thematic actions

National

- Enabling tiger states vis-à-vis concurrent listing
- Technical guidance and funding support
- Enabling use of technology in protection, surveillance, anti-poaching operations
- Due permission under national legislation for genetic exchange facilitation
- Transboundary actions vis-à-vis bilateral and regional instruments
- Knowledge sharing and joint monitoring
- Disease surveillance protocols and state of the art protocols
- Supporting wild tiger research and capacity building
- Fostering smart green infrastructure and related green actions to make tiger actions complementary to sustainable development
- Making a case for interlinkage of livelihood schemes and green business to support gainful local community stewardship in tiger landscapes
- Codifying SOPs for special requirements in the tiger context
- Engaging with states for enabling actions to facilitate a landscape scale approach

State

- Enabling environment in terms of policy decisions to complement national tiger related strategies
- Prioritizing frontline staff development and capacity building
- Launching climate smart tiger landscapes with sectoral integration at a landscape scale (context, site-specific with due monitoring architecture)
- Ensuring complementary support
- Envisioning a proactive human-wildlife preventive strategy in tiger landscapes in sync with ESZ zonal master plans, forming part of a tiger landscape specific master planning
- Evolving state level tiger centres of excellence for institutionalizing special tiger thematic actions integrating into ongoing extension programmes for citizen science.
- According topmost priority to human-tiger interface problems by categorizing them under natural disaster for preventive and control actions
- Innovatively linking One Health approach in buffer areas and tiger landscapes with other Government of India schemes

Tiger Landscapes

Core (Exclusive, tiger first)

- Smart patrolling
- Modernizing protection infrastructure
- Habitat revival
- Prey augmentation, *in-situ* translocation
- Tiger re-introduction
- Rapid response in conflict situations
- Community stewardship for human-wildlife conflict with due capacity building
- Smart Green Infrastructure (SGI), ecological mitigation and retrofitting measures for linear infrastructure passing through portions of tiger reserves
- Survey demarcation, voluntary relocation in a time bound manner, removal of illegal encroachment

Buffer, Corridor within Zone of Influence (ZoI) (inclusive, co-occurrence)

- Sustainable actions for Nature based Solutions (NbS) for gainful community-based stewardship through pooling of ongoing schemes to complement NTCA/ state support
- Capping buffer management as tiger eco-filter
- Land use planning for mainstreaming tiger concerns in the development sector
- Launching community driven interface monitoring system (24 x 7) with risk sharing mechanisms
- Regulated resource-use, keeping in mind the circadian rhythm of wild animals to prevent conditioned response
- Fine-tuning cash crop harvest calendars to avoid chance encounters
- Complementing local livelihoods through green/eco-markets
- Supporting citizen science in local schools on a mission mode with local mobile publicity campaigns

Rationale for Active Management

Tiger reserves in India are distributed across five major landscape complexes: the Shivalik Hills and Gangetic Plains, Central India and the Eastern Ghats, the Western Ghats, the Northeastern Hills including the Brahmaputra floodplains, and the Sundarbans. At present, India has 58 tiger reserves spread across 18 states, covering slightly more than 2.6% of the country's geographical area.

The most recent assessment of tigers, co-predators, prey species, and habitats (All India Tiger Estimation, 2022) estimates the wild tiger population at approximately 3,682 individuals. However, not all tiger reserves experience high population turnover characterized by significant numbers of births and deaths. Habitat productivity, determined by factors such as habitat quality and prey availability, varies naturally among tiger source areas and influences the biological carrying capacity of each reserve.

Some tiger landscapes have higher tiger densities, requiring active management interventions to ensure the long-term sustainability of tiger populations within a broader landscape characterized by diverse land uses and ownership patterns. The management approach adopted in a reserve depends largely on the status of its tiger population. Reserves with abundant habitat, a strong prey base, and healthy tiger populations generally require less investment and management effort than reserves where these ecological attributes are degraded.

To ensure the long-term sustainability of tiger landscapes, a "three-layered conservation architecture" is essential.

Foundational Layer

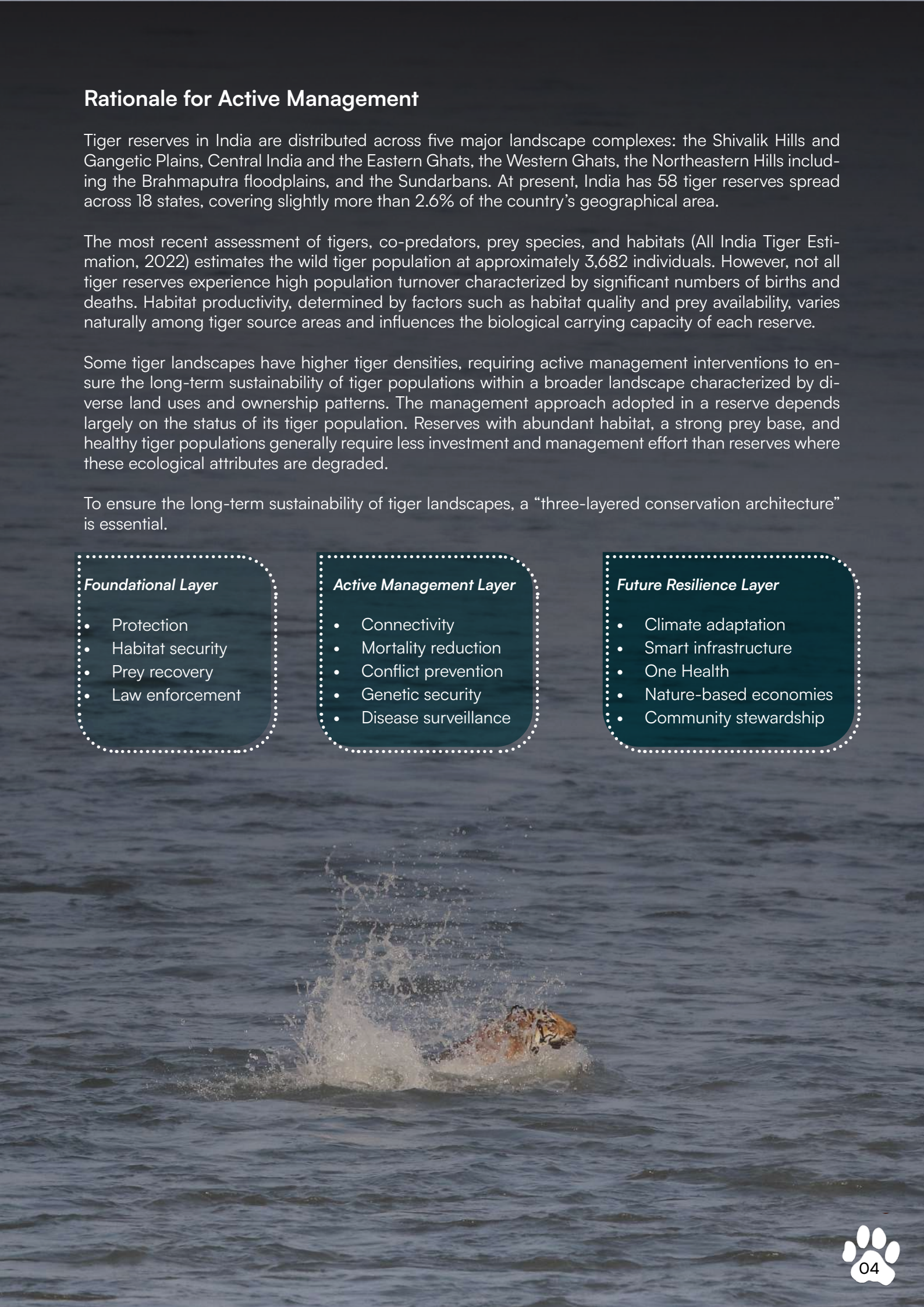
- Protection
- Habitat security
- Prey recovery
- Law enforcement

Active Management Layer

- Connectivity
- Mortality reduction
- Conflict prevention
- Genetic security
- Disease surveillance

Future Resilience Layer

- Climate adaptation
- Smart infrastructure
- One Health
- Nature-based economies
- Community stewardship



01. THE STATE OF TIGER POPULATION IN INDIA

India currently supports the world's largest population of wild tigers and is the principal stronghold for global tiger conservation. The most recent national assessment estimated 3,682 (3,167—3,925) tigers in India in 2022 (Qureshi *et al.*, 2023), representing nearly 70% of the global wild tiger population (Figure 1). This demographic recovery is one of the most significant large carnivore conservation outcomes globally, achieved through sustained investment in legal protection, habitat management, prey recovery, anti-poaching enforcement, and systematic monitoring under Project Tiger (Jhala *et al.*, 2021).

India's tiger population has increased steadily and substantially over the last two decades. Estimates from the All India Tiger Estimation (AITE) exercise indicate that the national population increased from 1,411 individuals in 2006 to 1,706 in 2010, 2,226 in 2014, 2,967 in 2018, and 3,682 in 2022 (Jhala *et al.*, 2011; Jhala *et al.*, 2015; Jhala *et al.*, 2020; Qureshi *et al.*, 2023). Analyses across consistently sampled landscapes indicate an average annual growth rate of approximately 6% per year (Qureshi *et al.*, 2023), reflecting sustained recruitment, cub survival, and population expansion in multiple source landscapes. Population gains have been particularly observed in the Shivalik Hills & Gangetic Plains, Central India, and Western Ghats, where high prey densities and sustained protection have enabled demographic recovery and spatial expansion.

This increase in tiger numbers has been accompanied by a major expansion and consolidation of protected habitat under Project Tiger. From nine tiger reserves at the inception of Project Tiger in 1973, India expanded to 58 tiger reserves by 2025, covering nearly 85,000 km^2 of notified tiger habitat, strengthened by the legal recognition of Core Critical Tiger Habitats (CTHs) under the Wildlife (Protection) Act, 1972, as amended in 2006. These core areas are designed to function as inviolate habitats where ecological processes essential for tiger persistence could be maintained with minimal anthropogenic disturbance. Around these cores, buffer areas are designated to absorb edge pressures, support coexistence, and maintain habitat permeability.

India's tiger recovery, however, must now be understood not simply as an increase in numbers within protected areas, but as the emergence of a functioning, landscape-scale metapopulation. Tigers in India persist as spatially structured populations distributed across source reserves, connected forests, territorial divisions, and multiple-use landscapes.

Several tiger reserves now support relatively high tiger densities. As tiger populations increase, density-dependent ecological processes become more pronounced. Under these conditions, subadult and transient individuals increasingly disperse to buffer forests, territorial divisions, and adjoining protected habitats through connected forested landscapes. Such outward movement is a natural and expected feature of recovering carnivore populations and reflects improving population status and demographic stability. At the same time, it signals a transition to a more spatially complex phase of management, in which conservation attention must increasingly extend beyond source areas to encompass dispersal habitats, movement pathways, and adjoining multiple-use landscapes.

Dispersing tigers move through natural movement pathways and habitat corridors that link source reserves to adjoining habitats and protected areas. These corridors facilitate dispersal, maintain gene flow, reduce genetic isolation, enable recolonization of habitats, and provide demographic rescue to small or declining populations (Thatte *et al.*, 2018). At the same time, they are also the most vulnerable to disturbance. Most lie outside protected areas and are increasingly affected by the expansion of settlement areas and agriculture, changing land use patterns, and developmental activities. Roads, railway lines, canals, transmission lines, and associated linear infrastructure are fragmenting connecting habitats, constraining movement, increasing mortality risk, and increasing the probability of encounters with humans and livestock.

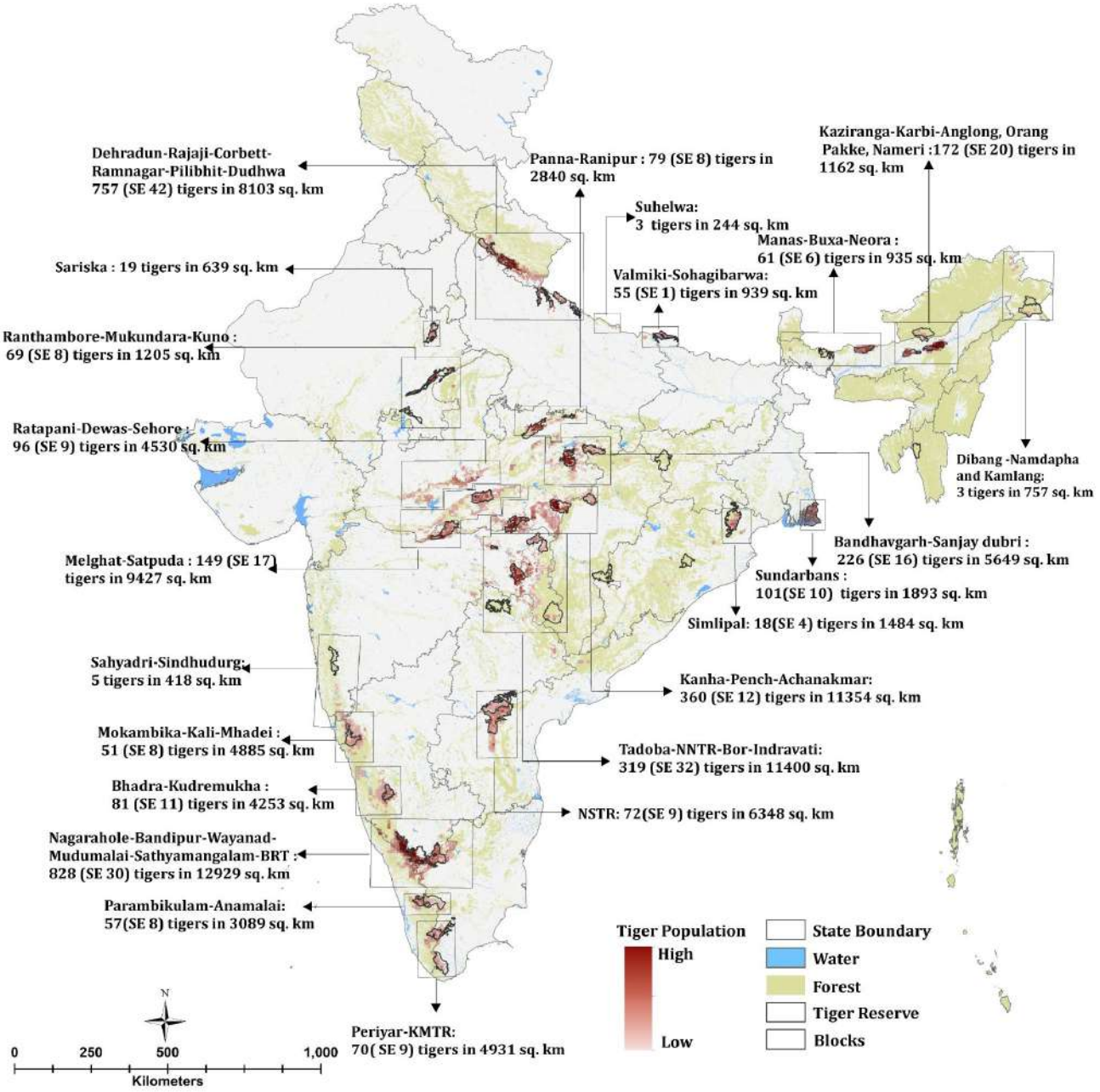


Figure 1. Tiger density, extent and population blocks in India (All India Tiger Estimation, 2022)

The need for active management of tigers

In fragmented landscapes, tiger dispersal from source populations, to sink areas, can become increasingly difficult. Dispersing tigers may move into forest edges and peripheral habitats where prey densities are low, habitat quality is poor, and anthropogenic disturbance is high. Such areas may provide temporary cover, but they often do not provide the prey base, habitat security, or spatial connectivity needed to support long-term persistence (Karanth *et al.*, 2004; Qureshi *et al.*, 2014) (Figure 2). Tigers moving through these landscapes are therefore more likely to use village edges, livestock grazing areas, and other human-dominated spaces, increasing the likelihood of repeated interactions with people and domestic animals (Athreya *et al.*, 2013; Jhala *et al.*, 2023).

This creates a recurring management problem in many tiger landscapes. In addition to higher mortality in poorly suited habitats, livestock depredation, attack on humans, retaliatory responses, emergency captures, and conflict-related incidents increase in surrounding areas (Goodrich *et al.*, 2022; Harihar *et al.*, 2014).

Active management is needed to reduce these risks and improve how dispersing tigers are accommodated across the landscape. This includes strengthening conflict-response systems in areas where tiger movement is likely, improving prey and habitat conditions in potential recipient areas, and maintaining forested linkages that allow safer movement between source and peripheral habitats (Johnsingh *et al.*, 2010; Qureshi *et al.*, 2014).

In some situations, strategic translocation can also be used to reduce pressure in high-density source populations and improve occupancy in suitable but underused habitats, provided that ecological suitability, prey availability, and the causes of prior local decline have been carefully assessed (Harihar *et al.*, 2018; NTCA, 2019). When applied within a clear ecological framework, such interventions can reduce mortality, lower conflict risk, and improve the long-term stability of connected tiger populations across the landscape.

Recent research on tiger ecology has substantially enhanced our understanding of how tigers persist, disperse, and establish territories in increasingly fragmented and human-dominated landscapes. Studies integrating GPS telemetry and movement ecology have demonstrated that tigers exhibit considerable behavioural plasticity, modifying their movement patterns, activity schedules, and space-use strategies in response to both ecological conditions and anthropogenic pressures (Habib *et al.*, 2021; Hussain *et al.*, 2025). Long-term monitoring of dispersing individuals has further highlighted the importance of landscape permeability, with sub-adult tigers capable of undertaking extensive dispersal movements through heterogeneous and human-dominated environments, relying on remnant forest patches and habitat linkages as stepping stones during dispersal (Hussain *et al.*, 2022).

Advances in behavioural ecology have revealed that habitat selection by tigers is highly scale-dependent and influenced by behavioural state and life stage. Tigers preferentially select forests, dense vegetation, and riparian habitats while avoiding areas with high human disturbance, settlements, and major transportation infrastructure (Hussain *et al.*, 2026a). Furthermore, accelerometer-based studies have provided novel insights into the energetic demands of dispersal and territory establishment, demonstrating that energy expenditure varies across life stages and environmental conditions, reflecting the physiological costs of survival in modified landscapes (Hussain *et al.*, 2026b).

Complementing these ecological investigations, landscape genetic analyses have emphasized the critical role of maintaining functional connectivity to facilitate gene flow and demographic exchange among tiger populations. Research has shown that habitat fragmentation can significantly influence connectivity patterns, underscoring the need for landscape-level conservation planning that prioritizes ecological corridors and movement pathways (Modi *et al.*, 2025). In parallel, emerging work on connectivity conservation and mitigation of linear infrastructure impacts has highlighted the importance of integrating wildlife-friendly designs into development projects to reduce barrier effects and maintain ecological connectivity across tiger landscapes (Habib & Saxena, 2024).

Collectively, recent ecological research demonstrates that the long-term conservation of tigers requires approaches that extend beyond protected areas to encompass landscape-scale management, conservation of habitat connectivity, mitigation of infrastructure impacts, and strategies that promote coexistence between humans and wildlife across multi-use landscapes.

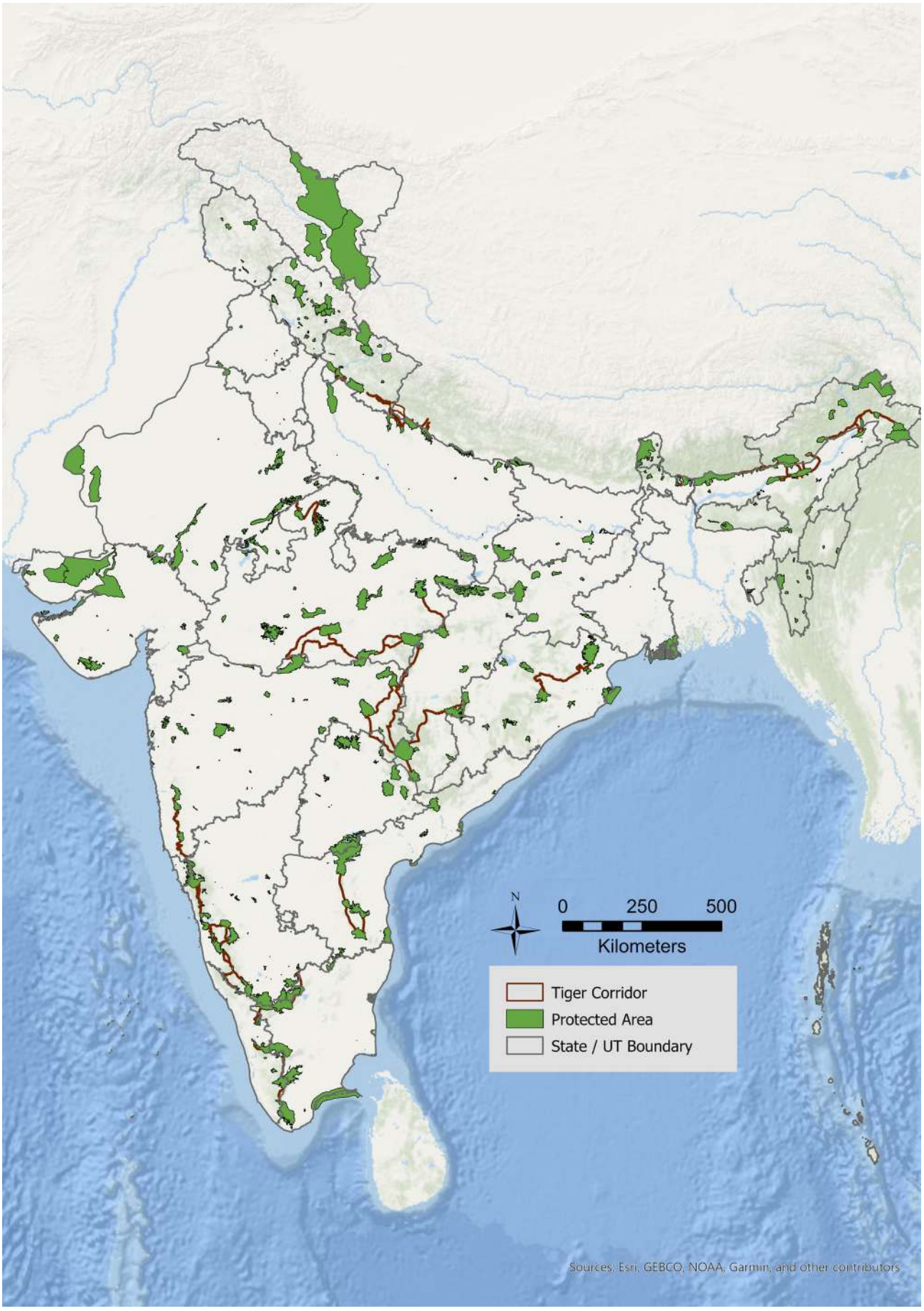


Figure 2. Spatial distribution of tiger bearing protected areas and corridors (2014).

02. TIGER LANDSCAPES AND POPULATION CLUSTERS IN INDIA

Shivalik Hills and Gangetic Plains

The Shivalik Hills and Gangetic Plains landscape extends across the states of Uttarakhand, Uttar Pradesh, and Bihar and represents one of the most important tiger conservation landscapes in northern India. Recent assessments indicate a significant expansion in tiger occupancy across the region, reflecting the success of conservation interventions and improved landscape connectivity (Qureshi *et al.*, 2023). The landscape encompasses several key source populations associated with major tiger reserves, including Rajaji, Corbett, Pilibhit, Dudhwa, and Valmiki, which collectively contribute to regional population persistence and dispersal.

Historical occupancy patterns demonstrate a marked increase in the spatial distribution of tigers over the past two decades. Estimated tiger occupancy in this landscape changed from 5177 km^2 in 2006 to 9414 km^2 in 2022. In 2006, tiger presence was largely restricted to protected areas and adjoining divisions. However, subsequent assessments conducted in 2014 and 2018 documented the colonization of multiple habitats beyond the boundaries of these tiger reserves, indicating active dispersal and range expansion by the species (Jhala *et al.*, 2020) (Table 1). This expansion suggests that several habitat corridors and intervening forest patches continue to facilitate tiger movement across the landscape. Tiger and potential prey densities are shown in Figures 3, 4 & 5 as per AITE 2022.

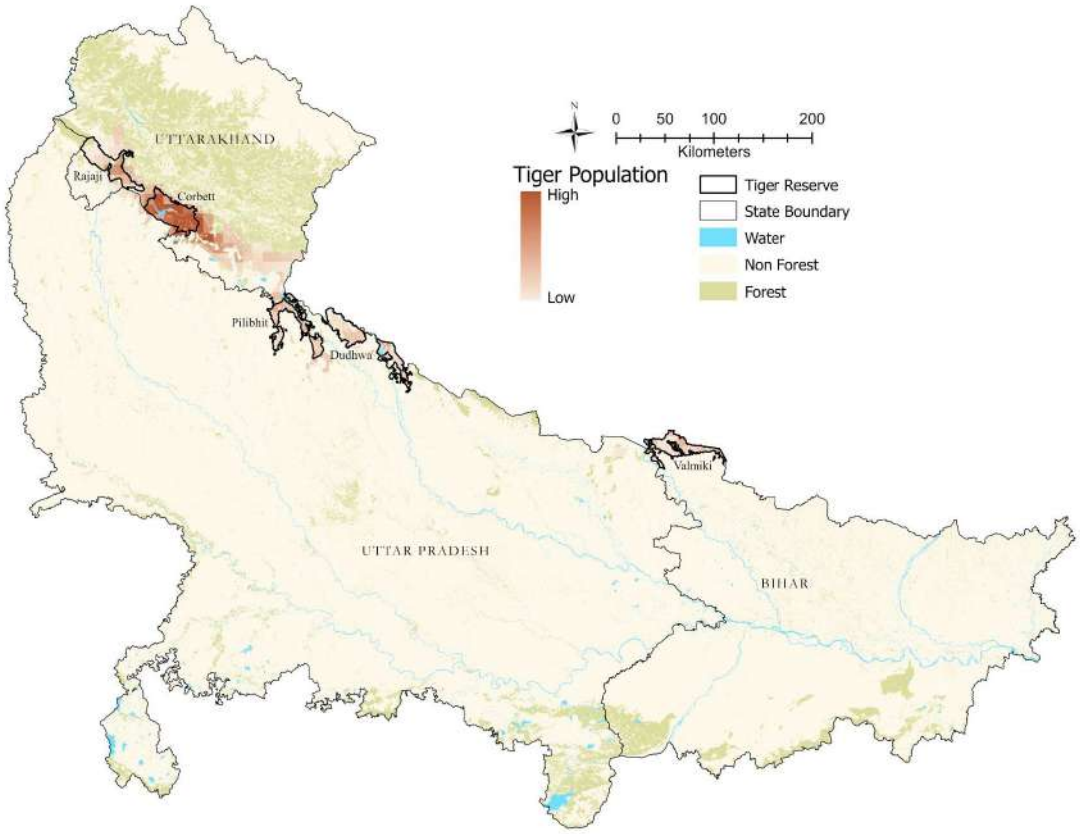


Figure 3. Tiger density, extent and population blocks in Shivalik Hills and Gangetic Plains Landscape (All India Tiger Estimation, 2022)

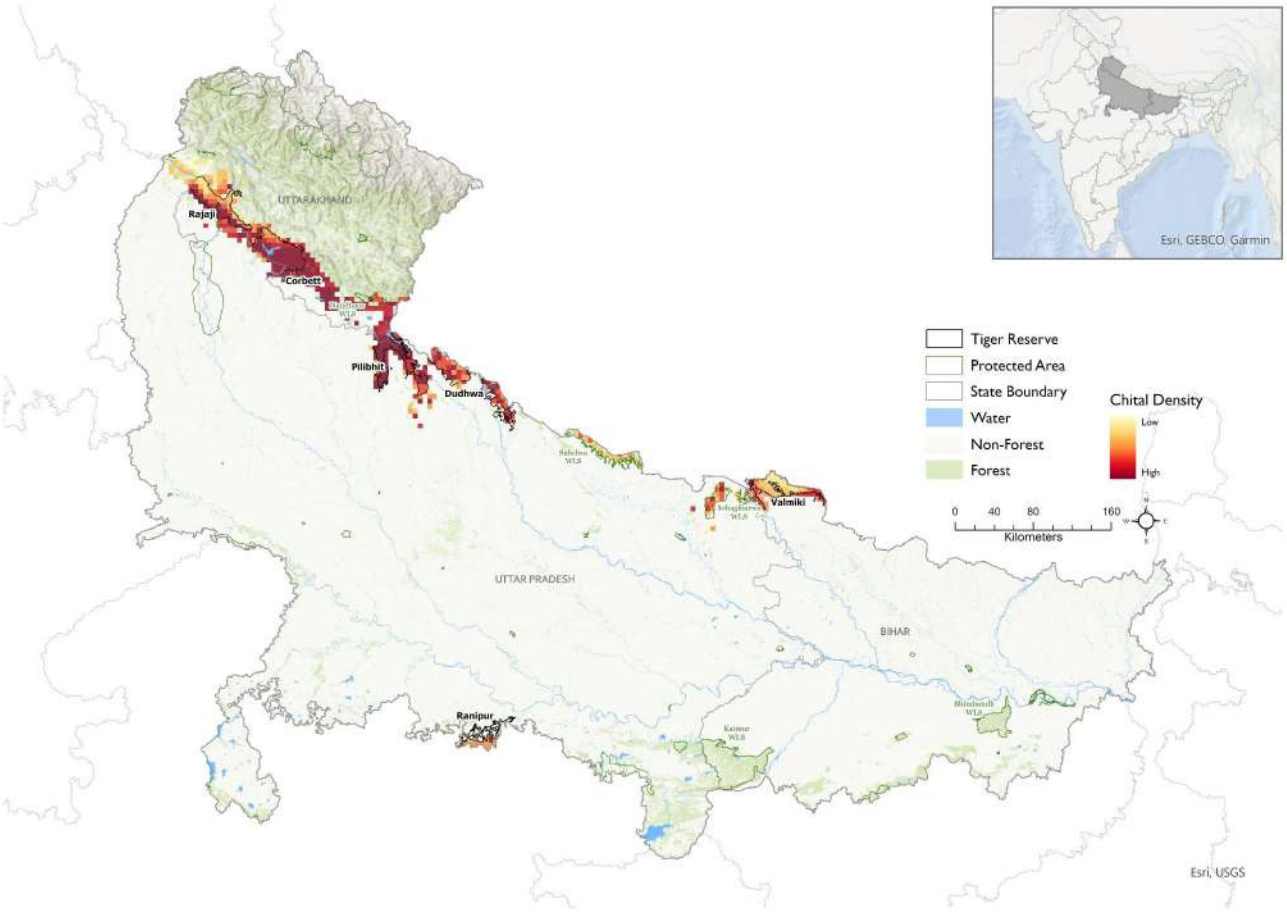


Figure 4. Density of Chital in Shivalik Hills and Gangetic Plains Landscape (All India Tiger Estimation, 2022)

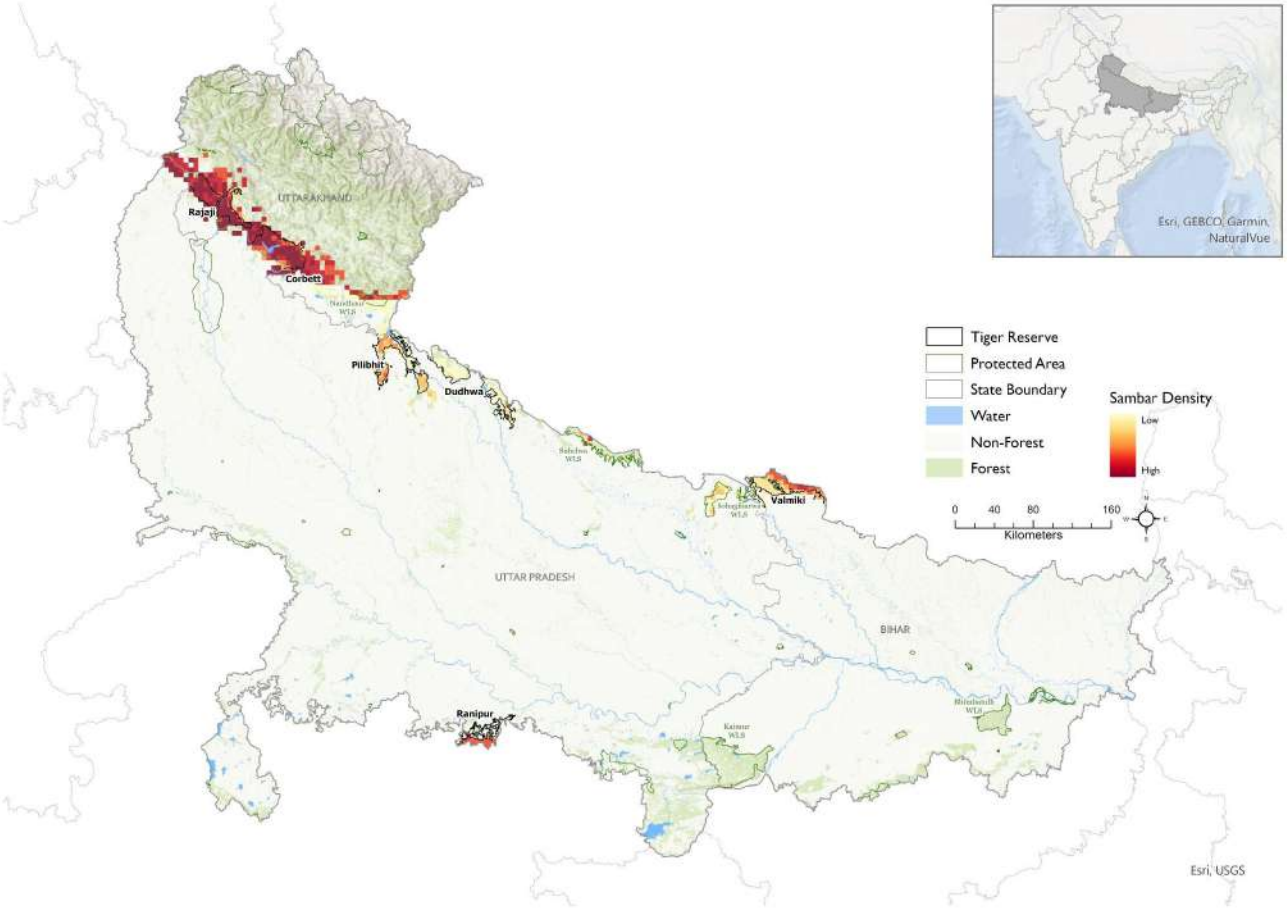


Figure 5. Density of Sambar in Shivalik Hills and Gangetic Plains Landscape (All India Tiger Estimation, 2022)

Table 1. Status of Tigers in the Shivalik Hills and Gangetic Plains Landscape

S. No.	Cluster	State	Tiger Reserve	Estimated Number of Tigers		Tiger Density (SE±) (AITE, 2022)
				AITE, 2014	AITE, 2022	
1	Shivalik Hills and Gangetic Plains	Uttarakhand	Rajaji	13#	54	8.15 (1.25)
2		Uttarakhand	Corbett	215	260	14.65 (0.92)
3		Uttar Pradesh	Pilibhit	25	63	5.84 (0.75)
4		Uttar Pradesh	Dudhwa	58	135	4.53 (0.77)* 6.10 (0.96)[1] 7.69 (1.04)[2]
5		Bihar	Valmiki	22	54	4.23 (0.06)

Mt+1
* Tiger Density in Dudhwa NP
[1] Tiger Density in Kishenpur WLS
[2] Tiger Density in Katerniaghat WLS

Central India and Eastern Ghats

The Central India—Eastern Ghats landscape is the largest tiger conservation region in the world and supports the highest tiger population in India. This extensive landscape spans the states of Rajasthan, Madhya Pradesh, Maharashtra, Chhattisgarh, Jharkhand, Odisha, Telangana, and Andhra Pradesh, encompassing several distinct biogeographic regions, such as the central highlands, deccan peninsula, Chhotanagpur plateau eastern ghats that collectively sustain tiger populations and landscape connectivity. There is a significant increase in tiger occupancy in the landscape. Estimated tiger occupancy in this landscape changed from 48,610 km^2 in 2006 to 59,316 km^2 in 2022. Tiger numbers has also shown an increase and the details are depicted in Table 2.

The region has also demonstrated remarkable conservation success through scientifically managed species recovery programmes. Notably, tiger populations in both Sariska Tiger Reserve in Rajasthan and Panna Tiger Reserve in Madhya Pradesh experienced local extinction during the early 2000s. Through carefully planned reintroduction programmes involving the translocation of founder individuals, intensive protection measures, habitat management, and continuous monitoring, both reserves have achieved substantial population recovery.

To secure additional habitat for expanding tiger populations, several new tiger reserves have recently been established within the landscape. These include Madhav, Ratapani, and Veerangana Durgavati Tiger Reserves in Madhya Pradesh, and Dholpur—Karauli Tiger Reserve in Rajasthan. Tiger and potential prey densities are shown in Figures 6, 7 & 8 as per AITE 2022.

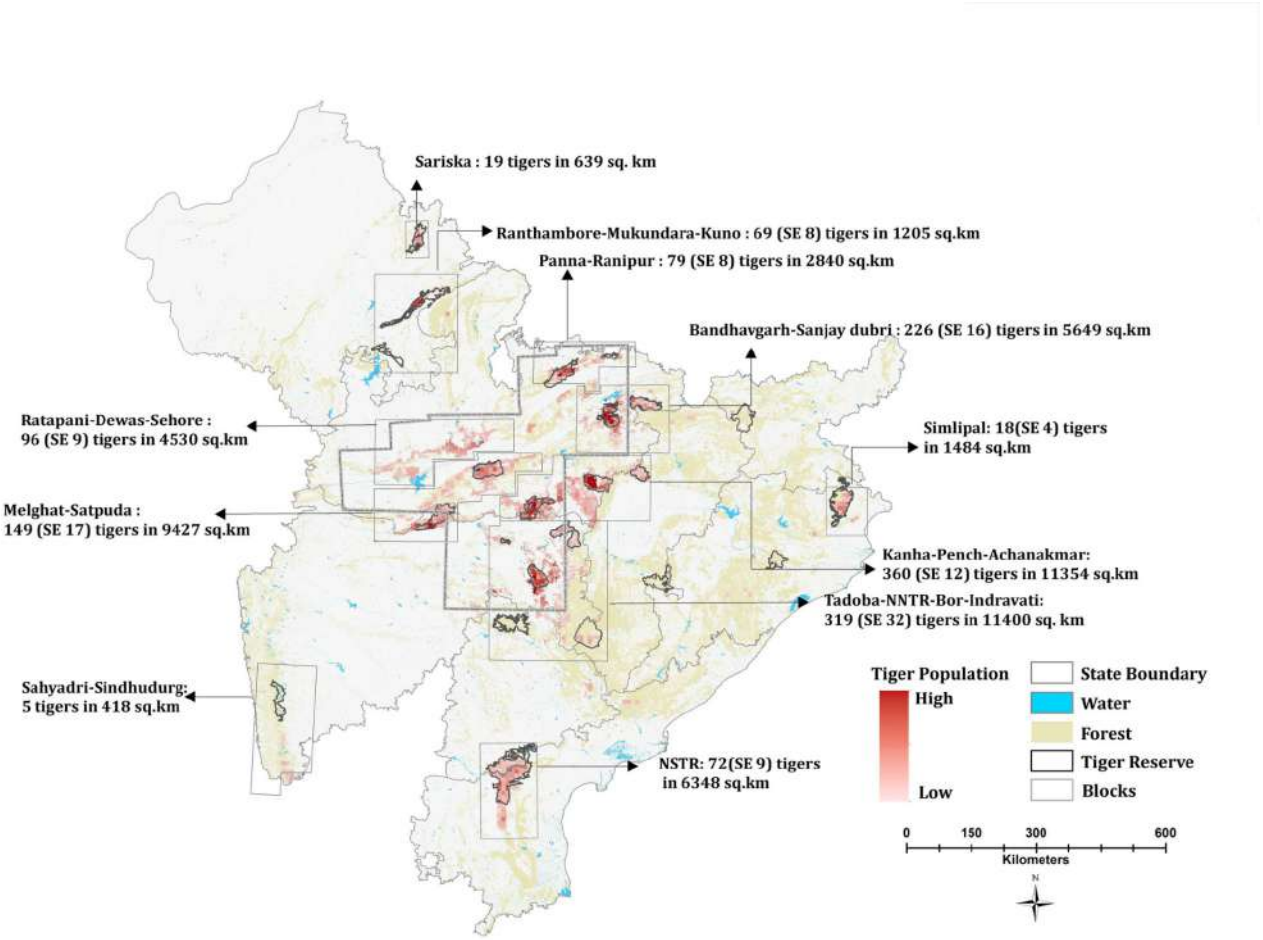


Figure 6. Tiger density, extent and population blocks in Central India and Eastern Ghats Landscape (All India Tiger Estimation, 2022)

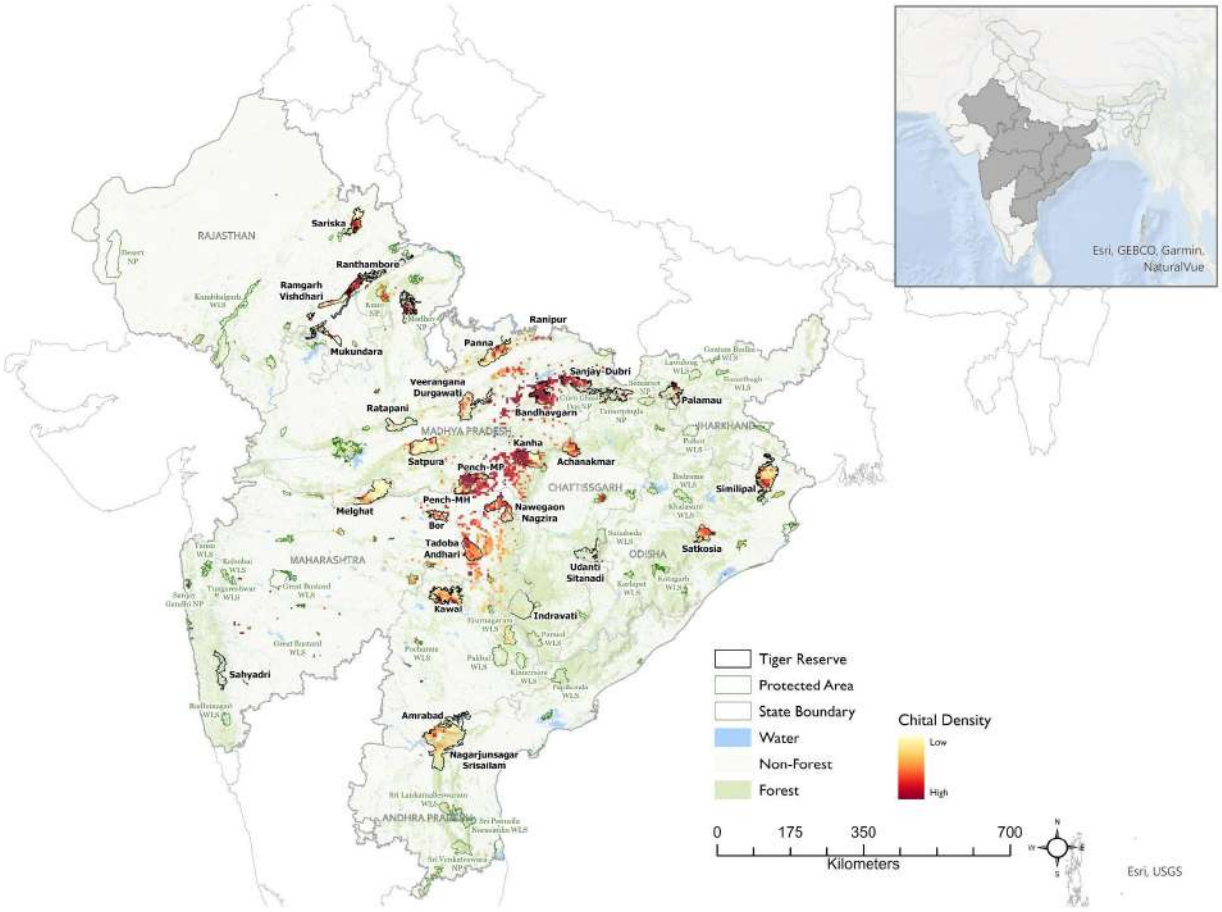


Figure 7. Density of Chital in Central India and Eastern Ghats Landscape (All India Tiger Estimation, 2022)

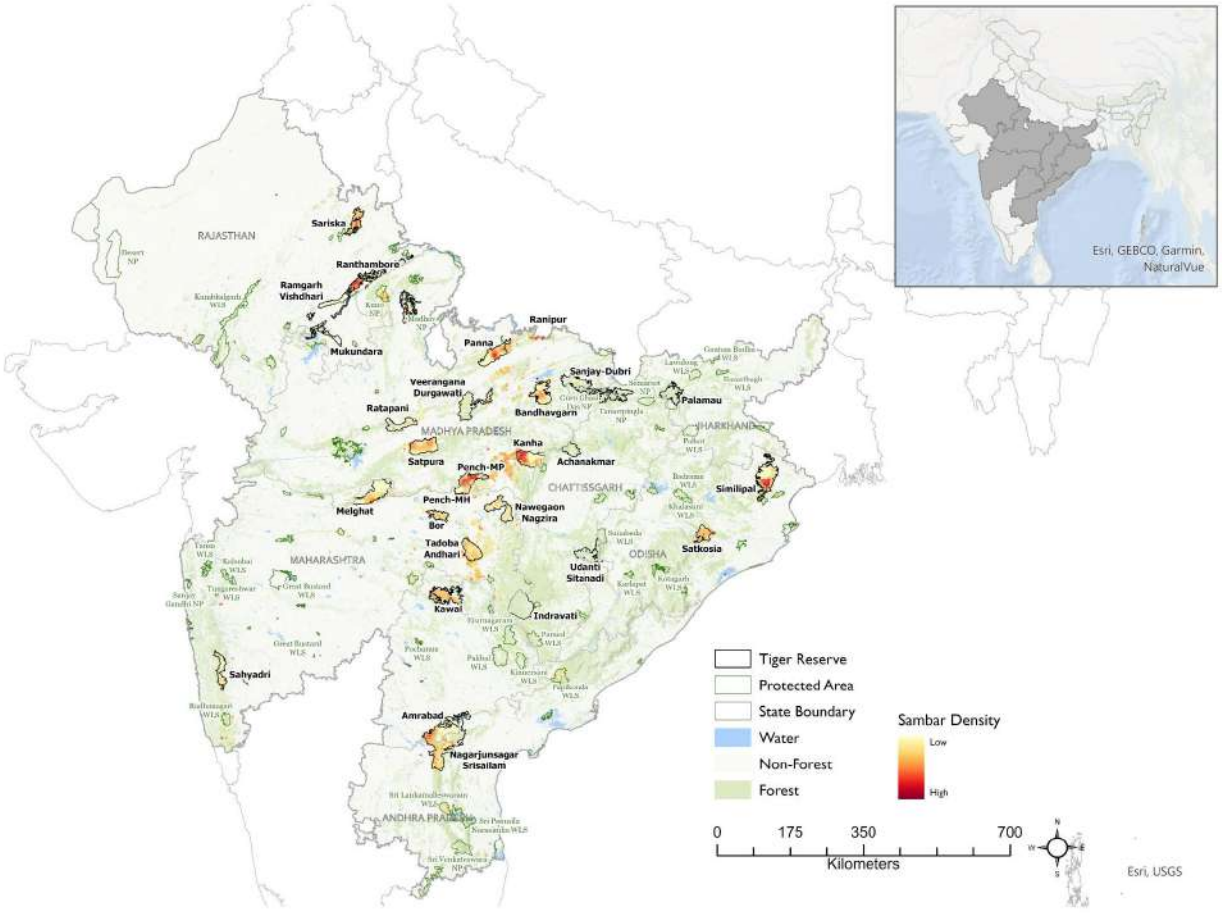


Figure 8. Density of Sambar in Central India and Eastern Ghats Landscape (All India Tiger Estimation, 2022)

Table 2. Status of Tigers in the Central India and Eastern Ghats Landscape

S. No.	Cluster	State	Tiger Reserve	Estimated Number of Tigers		Tiger Density (SE±) (AITE, 2022)
				AITE, 2014	AITE, 2022	
1	North-western India	Rajasthan	Sariska	9	19	NA
2		Rajasthan	Dholpur Karauli	NA	*	NA
3		Rajasthan	Ranthambhore	37	57	9.6 (1.27)
4		Rajasthan	Ramgarh Vishdhari**	NA	1	NA
5		Rajasthan	Mukundara Hills	NA	1	NA
6		Madhya Pradesh	Madhav**	NA	*	NA
7	Central India	Uttar Pradesh	Ranipur	NA	4	NA
8		Madhya Pradesh	Panna	17	55	3.18 (0.43)
9		Madhya Pradesh	Veerangana Durgavati**	NA	*	NA
10		Madhya Pradesh	Bandhavgarh	63	135	7.5 (0.65)
11		Madhya Pradesh	Sanjay Dubri	8	16	0.78 (0.20)
12		Madhya Pradesh	Ratapani	NA	56	2.30 (0.31)
13		Madhya Pradesh	Satpura	26	50	2.01 (0.28)
14		Madhya Pradesh	Kanha	80	105	5.57 (0.54)
15		Madhya Pradesh	Pench	43	77	5.50 (0.6)
16		Chhattisgarh	Guru Ghasidas Tamor Pingla	NA	*	NA
17		Chhattisgarh	Achanakmar	11	5	NA
18		Chhattisgarh	Udanti Sitanadi	4	1	NA
19		Chhattisgarh	Indravati	12	1	NA
20		Jharkhand	Palamau	3 (from scat DNA)	1	NA
21		Maharashtra	Pench	35	48	5.11 (0.74)

22	Central India	Maharash-tra	Melghat	25	57	1.92 (0.26)
23		Maharash-tra	Nawegaon Nagzira**	7	11	0.64 (0.20)
24		Maharash-tra	Tadoba Andhari	51	97	6.33 (0.64)
25		Maharash-tra	Bor	5	9	1.02 (0.35)
26		Telangana	Kawal	NA	0	NA
27		Telangana	Amrabad	NA	12	0.40 (0.12)
28	Northern Eastern Ghats	Odisha	Similipal	17	16	0.91 (0.23)
29		Odisha	Satkosia	3	0	NA
30	Southern Eastern Ghats	Andhra Pradesh	Nagar-junsagar Srisailam	54	58	0.77 (0.1)

* The newly notified Tiger Reserves were not included in the All India Tiger Estimation (AITE), 2022; therefore, tiger population estimates are not available for these reserves.

**The status presented reflects conditions at the time of assessment. Ongoing tiger reintroduction, supplementation, or population augmentation programmes may influence current population status

Western Ghats

The Western Ghats landscape extends across the states of Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu and represents one of the most important tiger conservation regions in southern India. Although the landscape has the ecological potential to support nearly contiguous tiger occupancy across much of its extent, habitat continuity is influenced by rugged terrain, anthropogenic land-use changes, and linear infrastructure. Nevertheless, compared to other tiger landscapes in India, the Western Ghats remains relatively well connected, enabling movement and genetic exchange among several tiger populations.

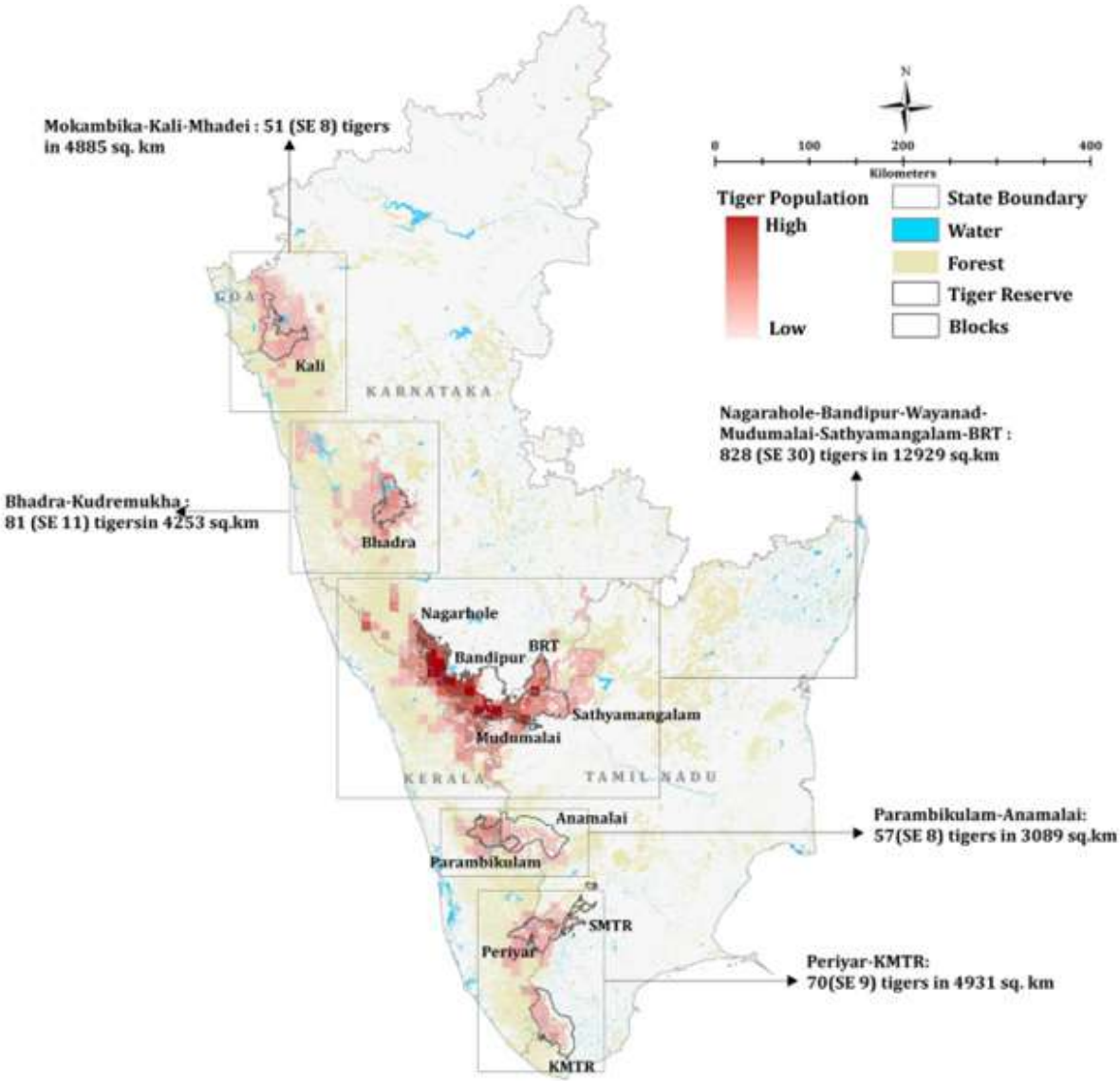


Figure 9. Tiger density, extent and population blocks in Western Ghats Landscape (All India Tiger Estimation, 2022)

A key feature of this landscape is the extensive habitat complex comprising Nagarhole, Bandipur, Mudumalai, Sathyamangalam, and Biligiri Ranganatha Temple (BRT) Tiger Reserves. This interconnected forest block forms the largest contiguous tiger habitat in the Western Ghats and supports the highest tiger densities within the landscape. Owing to its large area, high prey abundance, and relatively intact habitat conditions, this cluster functions as a major source population.

In contrast, the northern portion of the Western Ghats landscape, including Kali and Bhadra Tiger Reserves, supports comparatively lower tiger densities. Although these protected areas contain substantial forest cover, limitations in prey abundance, and the availability of suitable tiger habitat reduce their capacity to support large tiger populations.

Estimated tiger occupancy in this landscape changed from 34094 km^2 in 2006 to 29263 km^2 in 2022. Table 3 shows the change in tiger density from 2014 to 2022.

South of the Palghat Gap, tiger populations also occur at relatively lower densities. Unlike many other regions where reduced tiger abundance is primarily driven by anthropogenic pressures, the lower densities in this part of the Western Ghats are largely associated with naturally occurring ecological conditions, particularly lower prey densities. As a result, tiger densities in these areas are generally lower despite the presence of extensive forest cover and relatively intact habitats. Tiger and potential prey densities are shown in Figures 9, 10 & 11 as per AITE 2022.

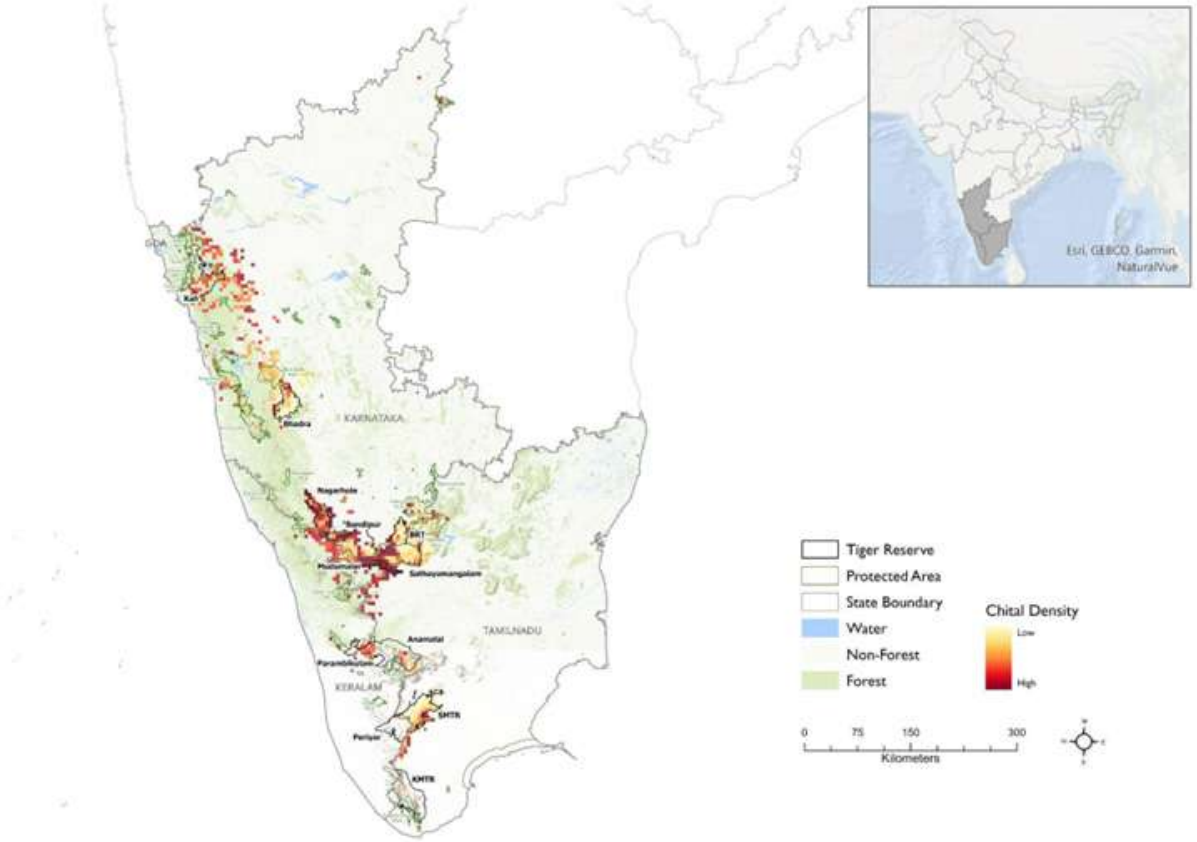


Figure 10. Density of Chital in Western Ghats Landscape (All India Tiger Estimation, 2022)

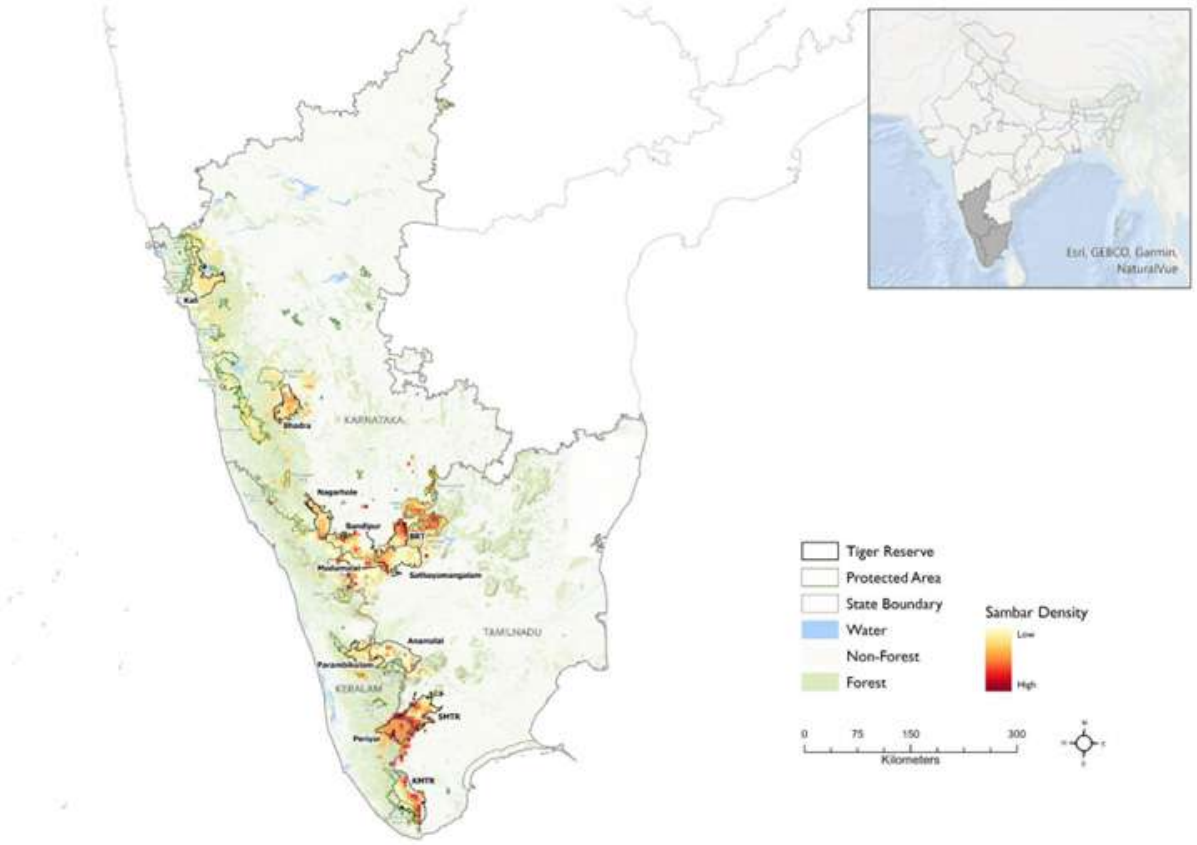


Figure 11. Density of Sambar in Western Ghats Landscape (All India Tiger Estimation, 2022)

Table 3. Status of Tigers in the Central India and Eastern Ghats Landscape

S. No.	Cluster	State	Tiger Reserve	Estimated Number of Tigers		Tiger Density (SE±) (AITE, 2022)
				AITE, 2014	AITE, 2022	
1	Northern and Central Western Ghats	Maharashtra	Sahyadri**	7#	0	NA
2		Karnataka	Kali	3	17	0.57 (0.14)
3		Karnataka	Bhadra	22	28	2.34 (0.44)
4		Karnataka	Nagarhole	101	141	11.15 (0.95)
5		Karnataka	Bandipur	120	150	9.50 (0.77)
6		Karnataka	BRT	68	37	4.18 (0.69)
7		Tamil Nadu	Mudumalai	89	114	7.72 (0.72)
8		Tamil Nadu	Sathyamangalam	72	85	4.24 (0.46)

9	Southern Western Ghats	Tamil Nadu	Anamalai	13	16	0.69 (0.17)
10		Tamil Nadu	Srivilliputhur-Meghamalai	NA	12	1.05 (0.31)
11		Tamil Nadu	Kalakad Mundanthu-rai	10	5	0.27 (0.12)
12		Kerala	Parambiku-lam	19	31	2.29 (0.41)
13		Kerala	Periyar	20	30	1.43 (0.27)

**The status presented reflects conditions at the time of assessment. Ongoing tiger reintroduction, supplementation, or population augmentation programmes may influence current population status
from scat DNA

Northeastern Hills and Brahmaputra Floodplains

The Northeastern Hills and Brahmaputra Floodplains landscape encompasses the states of Arunachal Pradesh, Assam, and Mizoram and represents one of the most ecologically distinct tiger conservation regions in India. Owing to its diverse topography, habitat types, and biogeographic characteristics, the landscape is commonly divided into three broad regions: the North Bengal Dooars, the Brahmaputra Floodplains, and the Northeastern Hills.

While tiger abundance in the hill regions has remained consistently low, the extensive and contiguous forest cover connecting these areas with the Brahmaputra floodplains provides important habitat connectivity across the landscape. These forest linkages facilitate tiger dispersal and movement between populations, helping maintain demographic and genetic exchange despite ecological constraints.

The Brahmaputra floodplains, in contrast, support some of the most productive wildlife habitats in the region, characterized by fertile alluvial ecosystems, extensive grasslands, and abundant prey populations. These areas serve as important source habitats and play a critical role in sustaining tiger populations across the broader landscape.

Estimated tiger occupancy in this landscape changed from 4230 km^2 in 2006 to 3971 km^2 in 2022. Table 4 shows the change in tiger density from 2014 to 2022.

This landscape holds exceptional evolutionary significance. Genetic studies have demonstrated that the tiger population of northeastern India is distinct from populations found elsewhere in the country (Kolipakam *et al.*, 2019). This genetic uniqueness is likely influenced by historical and ongoing gene flow with tiger populations in Myanmar and other parts of Southeast Asia.Tiger and potential prey densities are shown in Figure 12 as per AITE 2022.

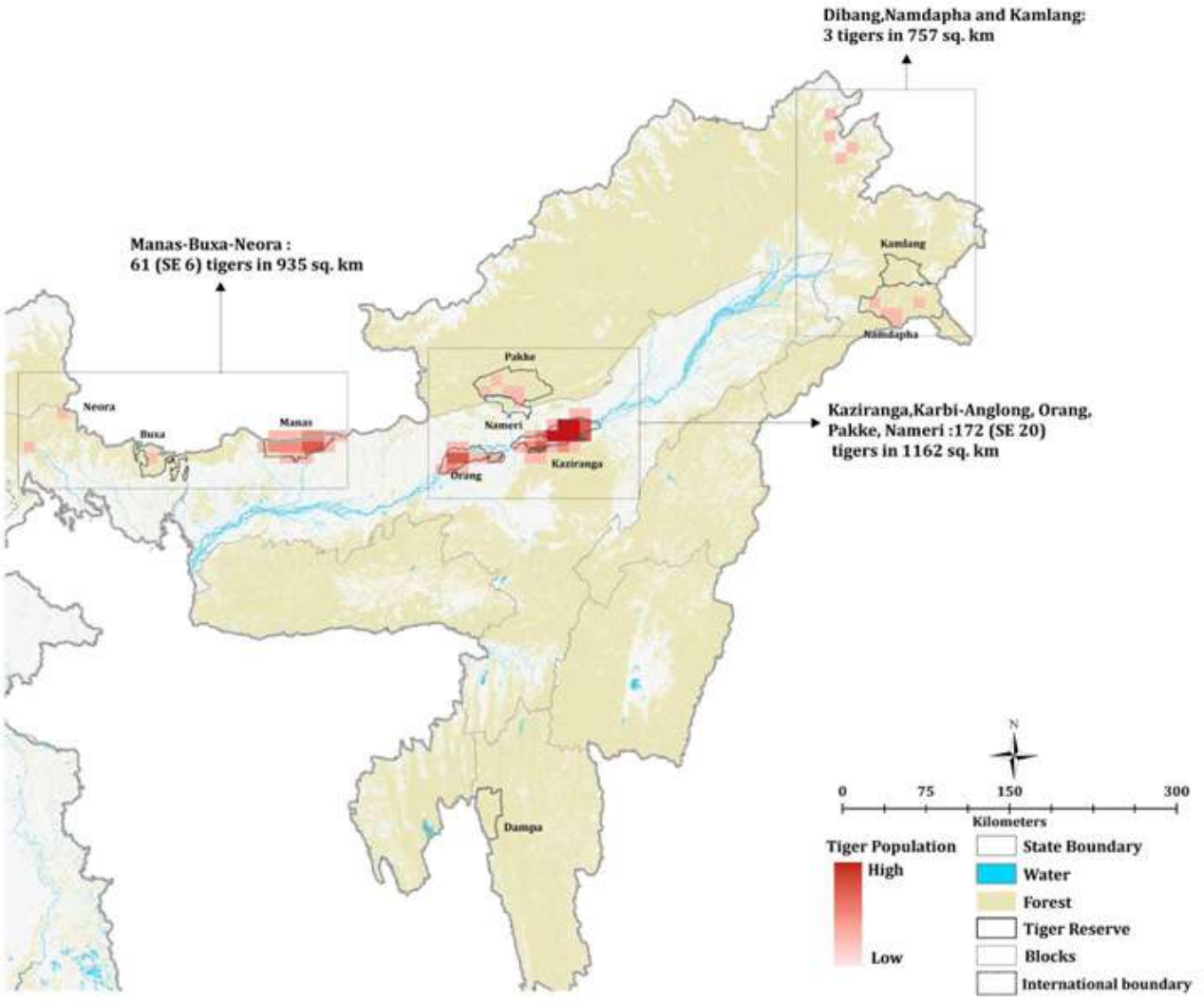


Figure 12. Tiger density, extent and population blocks in Northeastern Hills & Brahmaputra Floodplains Landscape (All India Tiger Estimation, 2022)

Table 4. Status of Tigers in the Northeastern Hills & Brahmaputra Floodplains Landscape

S. No.	Cluster	State	Tiger Reserve	Estimated Number of Tigers		Tiger Density (SE±) (AITE, 2022)
				AITE, 2014	AITE, 2022	
1	Western and Central Northeast India	West Bengal	Buxa	2*	1	NA
2		Assam	Manas	11	58	7.91 (1.05)
3		Assam	Kaziranga	103	104	13.44 (1.32)
4		Assam	Orang	15**	16	11.34 (2.9)
5		Assam	Nameri	5	3	NA
6		Mizoram	Dampa	3*	0	NA
7		Arunachal Pradesh	Pakke	7	6	NA
8	Eastern Northeast India	Arunachal Pradesh	Namdapha	11	1	NA
9		Arunachal Pradesh	Kamlang	NA	0	NA

* from scat DNA
** Mt+1

Sundarbans

The tiger population of the Sundarbans landscape is ecologically and biologically distinct from all other tiger populations in India. The reserve encompasses the world's only mangrove-dwelling tiger population, inhabiting a tidal, deltaic landscape characterized by saline and brackish waters, seasonal inundation, low density of large-bodied ungulates, and limited freshwater availability. These environmental conditions have driven morphological and behavioral differentiation in the local tiger population, including differences in body size, prey selection, and movement ecology. The prey base in the Sundarbans is composed primarily of spotted deer, wild pig, and aquatic prey species.

Estimated tiger occupancy in this landscape changed from 1586 km^2 in 2006 to 1894 km^2 in 2022.

As per AITE 2022, 101 tigers were recorded from Sundarbans, indicating a relatively high density of tigers in the landscape. This represents an increase from 88 individuals recorded in 2018. However, the range expansion potential of this population is inherently constrained by the extent of suitable mangrove habitat and the natural boundaries imposed by tidal channels and the Bay of Bengal. Given the population's ecological isolation, its high degree of local adaptation, and the complex socio-ecological context of the Sundarbans landscape, any future active management intervention, including translocation or genetic supplementation, would require thorough prior assessment of population demographics, genetic structure, prey availability, and habitat suitability. Tiger and potential prey densities are shown in Figure 13 as per AITE 2022.

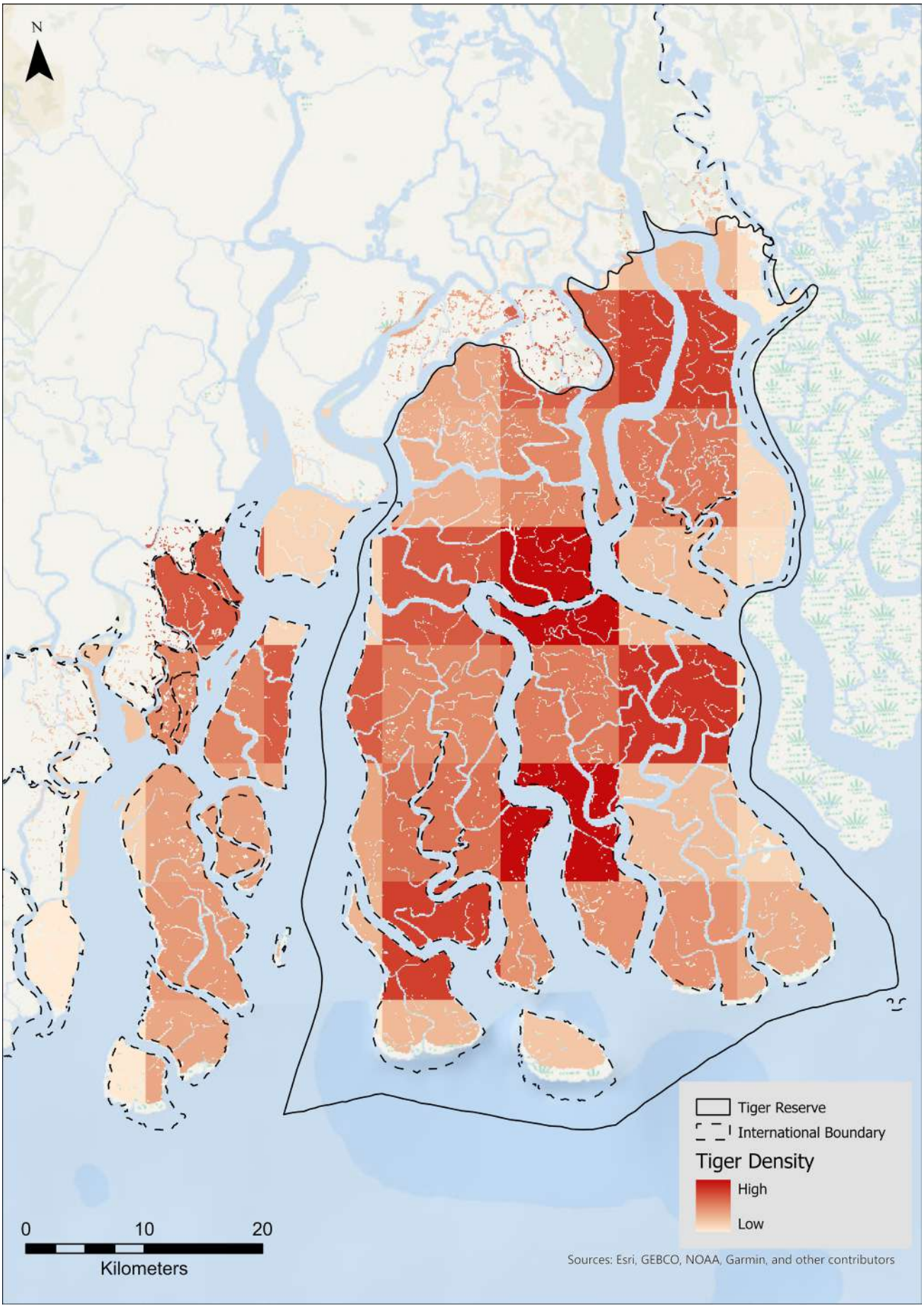


Figure 13. Tiger density in Sundarbans Landscape (All India Tiger Estimation, 2022)

03. A STRATEGIC FRAMEWORK

Why a Prioritization Framework is required

Tiger reserves across India differ considerably in their ecological condition, population status, prey abundance, habitat quality, landscape connectivity, and management challenges. While some reserves support large and growing tiger populations, others contain small populations, depleted prey bases, fragmented habitats, or local ecological constraints that limit population recovery. Consequently, a uniform management approach cannot be applied across all tiger reserves.

The recovery and long-term persistence of tiger populations depend on the interaction of three fundamental ecological components: tigers, prey populations, and habitat. Deficiencies in any one of these components can limit population growth and determine the type of management intervention required. For example, some reserves may primarily require strengthening of prey populations, while others may require habitat restoration, improved connectivity, or population supplementation through reintroduction programmes. In contrast, reserves supporting stable and growing populations may function as source populations and require continued protection rather than active population manipulation.

Given the large number of tiger reserves and the varying ecological conditions across landscapes, there is a need for a systematic framework to identify management priorities and allocate conservation resources effectively. A prioritization framework enables reserves to be assessed according to their stage of ecological recovery, identify the primary factors limiting tiger population persistence, and determine the most appropriate management pathway for recovery.

Such an approach allows active management interventions to be implemented in a targeted and phased manner, ensuring that supplementation and reintroduction programmes are undertaken only where ecological conditions are suitable and where long-term population persistence can be achieved. At the same time, it helps identify source populations, secure dispersal corridors, and strengthen landscape connectivity, thereby contributing to the development of resilient and interconnected tiger populations across India.

Core Pillars of Active Management

The pillars of active management provide an operational framework for managing tiger populations in increasingly complex socio-ecological systems, where conservation outcomes depend not only on protection within reserves but also on adaptive interventions across broader landscapes.

1. Habitat and Prey Management

The foundation of tiger recovery is the availability of suitable habitat and adequate prey populations. Management interventions should focus on maintaining habitat quality, securing critical habitats, improving prey abundance where limited, ensuring water availability, controlling anthropogenic pressures, and maintaining ecological processes that support long-term population persistence.

Management Focus

- Habitat protection and restoration
- Prey population recovery
- Water and grassland management
- Voluntary village relocation from critical habitats
- Reduction of anthropogenic pressures

2. Population Management

Population management aims to facilitate the recovery, persistence, and long-term genetic viability of tiger populations through natural dispersal and, where necessary, carefully planned conservation interventions. This component includes identification of source and recipient populations, translocation planning, reintroduction programmes, demographic supplementation, and post-release monitoring. However, recognizing that natural selection and dispersal are fundamental to maintaining ecological and evolutionary processes, translocation of tigers should be considered only as a measure of last resort, after all feasible options for habitat improvement, prey recovery, corridor restoration, and natural population expansion have been adequately explored.

Management Focus

- Source population management
- Tiger reintroduction and supplementation
- Genetic and demographic considerations
- Monitoring of population trends
- Long-term population viability

3. Landscape Connectivity Management

Long-term persistence of tiger populations depends on functional connectivity between habitats. Management should focus on securing ecological corridors, facilitating dispersal, maintaining genetic exchange, and reducing barriers to movement created by infrastructure and land-use change.

Management Focus

- Corridor identification and protection
- Connectivity assessments
- Linear infrastructure mitigation
- Monitoring dispersal pathways
- Interstate landscape coordination

4. Human—Tiger Interface Management

As tiger populations expand beyond protected areas, effective management of human—tiger interactions becomes increasingly important. The objective is to reduce conflict, improve public tolerance, and enable coexistence in shared landscapes.

Management Focus

- Rapid response systems
- Early warning mechanisms
- Compensation and relief measures
- Rescue and veterinary infrastructure
- Conflict monitoring and mitigation

5. Community Participation and Stewardship

Long-term conservation outcomes depend on the support and participation of local communities. Active management should seek to build trust, encourage stewardship, reduce conflict, and create incentives that promote coexistence and conservation support.

Management Focus

- Community awareness programmes
- Eco-development initiatives
- Livelihood diversification
- Participatory conservation

6. Monitoring, Research and Adaptive Management

Management interventions should be guided by robust scientific evidence and periodically refined based on ecological responses. Continuous monitoring provides the information required to evaluate management effectiveness and adapt strategies over time.

Management Focus

- Tiger and prey monitoring
- Habitat assessments
- Population viability assessments
- Telemetry and movement studies
- Adaptive management frameworks

Taken together, these pillars frame active management as an adaptive approach to tiger conservation. Grounded in science and supported by continuous monitoring, this approach enables targeted interventions that strengthen ecological function, reduce risk, and support coexistence. However, active management should be used as a transitional tool to restore ecological resilience, not as a permanent substitute for natural ecological processes.

A Strategic Blueprint for Active Management of Tiger Reserves

The framework presented in this report provides a structured approach for assessing the ecological status of tiger reserves and identifying management interventions required to facilitate recovery and long-term population persistence. It is based on the condition of three fundamental ecological components that collectively determine the capacity of a landscape to support a viable tiger population:

- Tiger population
- Prey population
- Habitat quality and extent

These three components form the foundation of tiger conservation and are closely interdependent. Habitat provides the ecological conditions necessary for sustaining prey populations, prey availability determines the carrying capacity for tigers, and tiger populations reflect the overall functionality of the ecosystem. Deficiencies in any one component can limit population recovery and influence the type of management intervention required. Each tiger reserve was assessed according to the status of these three components and classified into a recovery category. For the purpose of this framework:

- Positive (+) indicates that the component is present (increasing/stable), functional, and ecologically secure.
- Depressed (↓) indicates that the component is present but below its ecological potential, declining, or under ecological stress.
- Absent/Negative (–) indicates that the component is absent or functionally inadequate to support long-term tiger persistence.

The combination of tiger, prey, and habitat status was used to identify the principal ecological constraints operating within each reserve and to determine its stage of recovery. Reserves with similar ecological conditions were grouped into management categories requiring comparable conservation interventions.

This classification serves two complementary purposes. First, it provides a transparent and standardized method for prioritizing reserves according to their recovery status and management needs. Second, it establishes a recovery pathway that allows reserves to be viewed as dynamic systems capable of progressing from degraded ecological conditions towards self-sustaining tiger populations.

The framework therefore links ecological conditions directly to management action. By identifying whether habitat, prey, or tiger populations represent the primary limiting factor, managers can prioritize interventions more effectively and allocate conservation resources where they are likely to yield the greatest ecological benefit.

The categories presented in the following sections should not be viewed as fixed states, but rather as stages along a continuum of ecological recovery. Through effective protection, habitat management, prey recovery, connectivity conservation, and where necessary population supplementation or reintroduction, reserves can progressively move towards stable, resilient, and self-sustaining tiger populations that contribute to broader landscape-level conservation objectives.

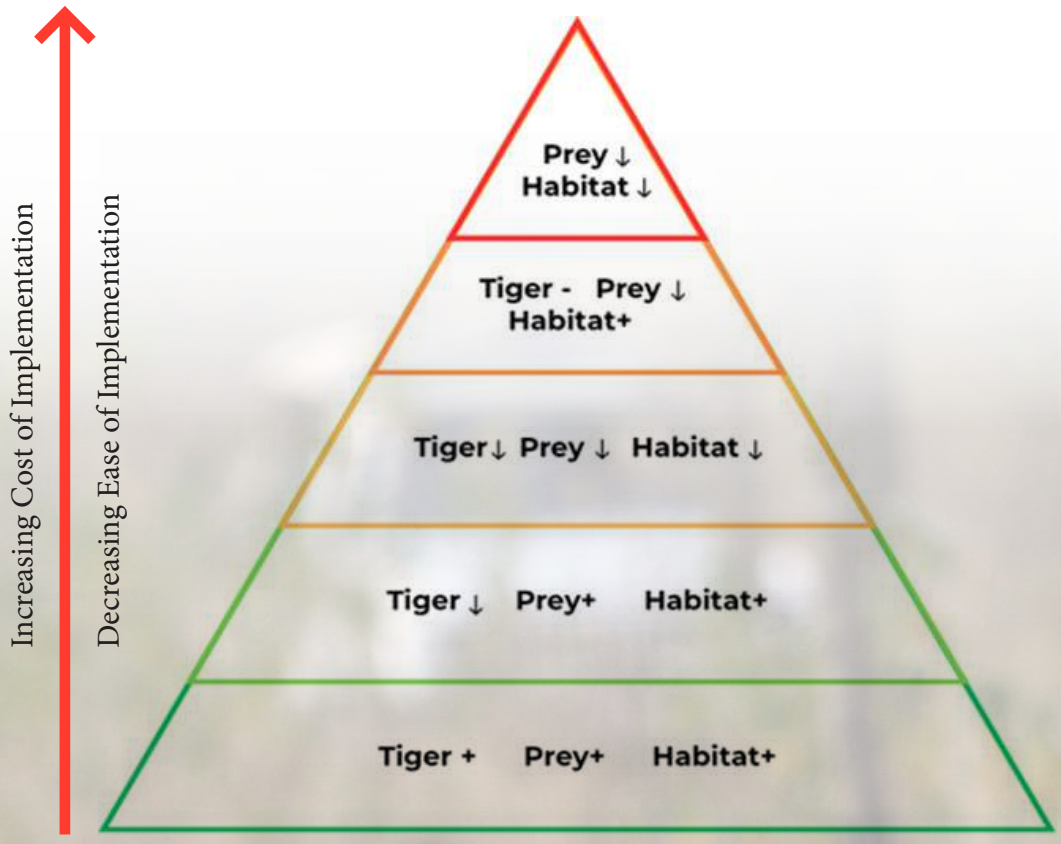


Figure 14. Pyramid of tiger reserve classification based on increasing cost and decreasing ease of implementation of management interventions (bottom to top)

Tiger reserves in India can be placed at different levels of the management status pyramid. Only a few reserves fall within the stable lower tier or the highly vulnerable upper tier, while most are located in the intermediate category. This variation highlights the need for a differentiated approach to tiger conservation. While the statutory framework of Project Tiger and the National Tiger Conservation Authority (NTCA) provides the foundation for tiger governance, management interventions must be tailored to the ecological condition and conservation needs of individual reserves.

The status pyramid demonstrates that active management cannot be applied uniformly across all tiger reserves. Reserves in the lower tiers primarily require strong protection measures and continuous monitoring. Those in the middle tiers need targeted interventions based on identified threats and management priorities. Reserves in the upper tiers, which face greater ecological challenges, require intensive restoration and recovery efforts.

In many tiger landscapes, geographical and demographic constraints limit the availability of adequate buffer zones around core habitats. The spatial relationship between core and buffer areas influences the effectiveness of conservation measures and restricts the buffering capacity of some reserves. In addition, tiger dispersal from source populations is affected by factors such as forest fragmentation, human-modified landscapes, ecological traps, irrigated agriculture, sugarcane cultivation, livestock-rich buffer areas, and riparian cropping systems. These features may attract dispersing tigers but often expose them to higher mortality risks due to human—wildlife conflict.

Corridors that facilitate tiger movement and gene flow may also connect source populations to low-quality or high-risk habitats, increasing the likelihood of losses from source areas. Given the human-dominated nature of many tiger landscapes, buffer areas are managed primarily as ecological filters that regulate tiger movement and reduce conflict, rather than as breeding source populations.

In this context, effective tiger conservation requires active management measures that align with existing Project Tiger guidelines, national wildlife legislation, and the strategy for conserving Tigers Outside Tiger Reserves (TOTR). These actions must also support India's climate commitments and the targets of the Convention on Biological Diversity (CBD).

Key Ecological Realities in Tiger Conservation

Several ecological factors shape tiger population dynamics and influence the management of tiger reserves.

FOREST FRAGMENTATION

- Creates sink and isolated habitats.
- Human-modified landscapes may appear resource-rich and attractive to dispersing tigers.
- However, high mortality rates in these areas often exceed reproductive gains, leading to population decline.

TIGER DISPERSAL DYNAMICS

- Tigers typically disperse from high-density source populations within protected areas to lower-density surrounding landscapes.
- This movement is largely one-way, with source populations supplying individuals to adjacent areas.
- Sink populations are unable to compensate for losses in source populations and therefore cannot sustain the broader landscape.

ROLE OF CORRIDORS

- Wildlife corridors facilitate tiger movement and gene flow between habitats.
- However, corridors are beneficial only when they connect to ecologically viable and sustainable habitats.
- Corridors leading to degraded or high-risk areas may increase tiger mortality and reduce the stability of source populations.

These ecological realities define the framework for tiger reserve management. The conservation role and management priorities of different landscape components are summarized below:

Component	Ecological Role	Management Implication
Protected Area (Core)	Primary source population	Maintain healthy prey populations and tiger numbers in accordance with the habitat's biological carrying capacity
Buffer Zone	Demographic filter for tiger dispersal	Reduce mortality risks, mitigate human—tiger conflict, and safely absorb dispersing individuals
Landscape (Zone of Influence)	Potential sink or ecological trap	Requires continuous active management to reduce threats, improve habitat quality, and maintain landscape connectivity

Tigers Present, Prey Present, Habitat Intact (Tiger+, Prey+, Habitat+)

Tiger reserves in which tiger populations, prey populations, and habitat conditions are all present and in good ecological condition represent healthy, self-sustaining ecosystems. These landscapes maintain functional predator—prey relationships, adequate habitat resources, and ecological processes capable of supporting viable tiger populations over the long term. Such reserves often function as source populations within larger landscapes, contributing dispersing individuals to adjacent habitats and playing a critical role in regional tiger conservation.

Reduced Tiger Population, Adequate Prey and Habitat (Tiger↓, Prey+, Habitat+)

In this category, prey populations and habitat conditions remain favorable, but tiger populations are lower than expected or show signs of decline. The presence of suitable habitat and sufficient prey indicates that the landscape retains the ecological capacity to support a larger tiger population. Factors such as poaching, human disturbance, retaliatory killings, disease, habitat fragmentation, or inadequate protection are often responsible for limiting population recovery.

Tigers Population, Prey and Habitat Depleted (Tiger↓, Prey↓, Habitat↓)

Herein, declines are observed simultaneously in tiger populations, prey abundance, and habitat quality. The ecological processes required to maintain functional predator—prey dynamics are progressively compromised. Habitat quality may be reduced through fragmentation, encroachment, unsustainable resource use, infrastructure development, invasive species or other anthropogenic disturbances. As habitat conditions deteriorate, prey populations are reduced, resulting in a decline in the tiger populations.

Tiger Absent, Prey Depleted, Habitat Intact (Tiger−, Prey↓, Habitat+)

These reserves are characterized by the absence of tigers and depleted prey populations despite the continued availability of suitable habitat. The persistence of relatively intact habitat indicates that the landscape retains the ecological potential to support both prey and tiger populations; however, historical overhunting, prey depletion, inadequate protection, or other anthropogenic pressures may have disrupted ecological processes and prevented the persistence of large carnivores.

Prey and Habitat Depleted (Prey↓, Habitat↓)

This category represents reserves in which both prey populations and habitat quality have been substantially reduced. Habitat degradation, fragmentation, encroachment, unsustainable resource use, infrastructure development, invasive species, or other anthropogenic disturbances have diminished the capacity of the landscape to support viable wildlife populations. As a result, the ecological conditions required for tiger persistence are absent, and tigers are typically locally extinct or occur only as occasional transient individuals.

From Recovery Landscapes to Source Populations

Tiger reserves differ considerably in their ecological condition and their capacity to support viable tiger populations. The status of tiger populations, prey abundance, and habitat quality collectively reflects the stage of ecological recovery at which a reserve currently exists. By assessing these three components together, reserves can be placed along a recovery continuum ranging from highly degraded systems to stable source populations. The recovery pathway is founded on a simple ecological principle: healthy habitats support abundant prey populations, prey availability determines the number of tigers that an area can sustainably support, and tiger populations represent the ultimate indicator of ecosystem functionality and ecological integrity. Consequently, recovery typically proceeds sequentially from habitat restoration to prey recovery, followed by tiger recovery and eventual population expansion.

The stages of recovery can be broadly represented as follows:

Habitat Recovery → Prey Recovery → Tiger Recovery → Population Expansion → Source Population

STAGE 1 *Habitat Recovery*

This represents the earliest stage of ecological recovery, where habitat quality has been substantially degraded and ecological processes have been disrupted. Prey populations are typically depleted or absent, and resident tiger populations are absent or functionally extinct.

Reserve condition: Tiger (–), Prey (↓), Habitat (↓)

Key interventions include:

- Habitat restoration
- Grassland and meadow development
- Invasive species management
- Water resource enhancement
- Village relocation and voluntary resettlement
- Reduction of anthropogenic disturbance

Only after habitat functionality has been restored can prey populations recover and ecological suitability improve.

STAGE 2 *Prey Recovery*

At this stage, habitat conditions are sufficiently intact or have recovered to support wildlife populations, but prey abundance remains below the level required to sustain a viable tiger population. Tigers are absent or occur only sporadically.

Reserve condition: Tiger (–), Prey (↓), Habitat (+)

Management actions should focus on:

- Strengthening protection against hunting
- Habitat improvement for herbivores
- Grassland management
- Enhancement of water resources
- Prey supplementation or *in-situ* prey augmentation where scientifically justified

The objective is to restore prey densities sufficient to support breeding tiger populations.

STAGE 3 *Tiger Recovery*

Habitat and prey populations are capable of supporting tigers, but tiger numbers remain absent or significantly low. Population recovery may be constrained by historical extirpation, isolation, poaching, or barriers to natural recolonization.

Reserve condition: Tiger (↓), Prey (+), Habitat (+)

Tiger recovery may occur through:

- Natural dispersal
- Population reinforcement
- Reintroduction programmes
- Supplementation from identified source populations

Management efforts during this phase should focus on:

- Monitoring survival and reproduction
- Maintaining protection standards
- Conflict mitigation
- Genetic monitoring for long term viability
- Ensuring adequate prey availability

STAGE 4 *Population Expansion*

At this stage, tiger populations are established and reproducing, but have not yet reached their ecological potential. Population growth is occurring and dispersal into available habitats is underway.

Reserve condition: Tiger (↑/recovering), Prey (+), Habitat (+).

Management priorities include:

- Maintaining habitat quality
- Monitoring dispersal patterns
- Securing corridors
- Managing emerging human-tiger interactions
- Monitoring prey-tiger relationships

Population expansion represents the transition from intensive recovery management towards ecological self-regulation.

STAGE 5 *Source Population*

This represents the desired end point of recovery. Tiger populations are stable, breeding successfully, and producing dispersing individuals. Habitat and prey populations remain secure and ecological processes function largely without intensive intervention.

Reserve condition: Tiger (+), Prey (+), Habitat (+)

Such reserves contribute to:

- Landscape connectivity
- Demographic rescue
- Genetic exchange
- Recovery of neighboring populations

Management priorities focus on:

- Maintaining ecological stability
- Facilitating dispersal
- Monitoring density-dependent processes
- Reducing conflict
- Supporting recipient landscapes

Tiger reintroduction from high-density source populations to tiger-deficient or locally extinct reserves can be viewed as a form of assisted dispersal, wherein managers facilitate the movement of tigers to landscapes that are unlikely to be recolonized naturally within a reasonable timeframe. By establishing or reinforcing populations in suitable habitats, assisted dispersal helps restore historical distribution, accelerate population recovery, and enhance connectivity between isolated populations. At a landscape scale, such interventions contribute to the development of viable metapopulations, improve demographic and genetic exchange, reduce extinction risk, and strengthen the long-term persistence of tigers across their range.

STATUS OF TIGER, PREY AND HABITAT OF TIGER RESERVES

Tiger reserves were classified based on the status of tiger and prey populations and habitat quality, using information from the All India Tiger Estimation (AITE) 2022, reserve monitoring data, habitat assessments, prey surveys, and expert evaluation. Each ecological component was assigned one of three conditions: increasing/stable (+), depressed (↓), or absent/non-functional (–).

Table 5. Status of Tigers, Prey and Habitat in the Tiger Reserves of India (as per AITE, 2022)

S. No.	Landscape	State	Tiger Reserve	Tiger	Prey	Habitat
1	NE	Arunachal Pradesh	Namdapha	-	↓	+
2	NE	Arunachal Pradesh	Pakke	↓	↓	+
3	NE	Arunachal Pradesh	Kamlang	-	↓	+
4	NE	Assam	Manas	+	↓	+
5	NE	Assam	Nameri	↓	↓	+
6	NE	Assam	Kaziranga	+	+	+
7	NE	Assam	Orang	+	+	+
8	NE	Mizoram	Dampa	-	↓	+
9	NE	West Bengal	Buxa	-	↓	↓
10	NE	West Bengal	Sundarban	+	+	+
11	CIEG	Andhra Pradesh	Nagarjunsagar Sagar	↓	↓	+
12	CIEG	Chattisgarh	Indravati	-	↓	↓
13	CIEG	Chattisgarh	Udanti Sitanadi	-	↓	↓
14	CIEG	Chattisgarh	Achanakmar	↓	↓	↓
15	CIEG	Chhattisgarh	Guru Ghasidas — Tamor Pingla	-	↓	↓
16	CIEG	Jharkhand	Palamau	↓	↓	↓
17	CIEG	Uttar Pradesh	Ranipur	↓	↓	↓
18	CIEG	Madhya Pradesh	Pench	+	+	+
19	CIEG	Madhya Pradesh	Bandhavgarh	+	+	+
20	CIEG	Madhya Pradesh	Panna	+	+	+

21	CIEG	Madhya Pradesh	Kanha	+	+	+
22	CIEG	Madhya Pradesh	Satpura	+	+	+
23	CIEG	Madhya Pradesh	Sanjay Dhubri	↓	↓	↓
24	CIEG	Madhya Pradesh	Veerangana Durgavati	↓	↓	↓
25	CIEG	Madhya Pradesh	Ratapani	↓	↓	↓
26	CIEG	Madhya Pradesh	Madhav	↓	↓	↓
27	CIEG	Maharashtra	Melghat	↓	↓	+
28	CIEG	Maharashtra	Tadobha Andhari	+	+	+
29	CIEG	Maharashtra	Pench — MH	+	+	+
30	CIEG	Maharashtra	Sahyadri	↓	↓	+
31	CIEG	Maharashtra	Nawegaon Nagzira	↓	↓	+
32	CIEG	Maharashtra	Bor	+	-	+
33	CIEG	Odisha	Satkosia	-	↓	+
34	CIEG	Odisha	Simlipal	↓	↓	+
35	CIEG	Rajasthan	Ranthambhore	+	+	+
36	CIEG	Rajasthan	Sariska	+	↓	↓
37	CIEG	Rajasthan	Mukundara Hills	↓	↓	↓
38	CIEG	Rajasthan	Ramgarh Vishdhari	↓	↓	↓
39	CIEG	Rajasthan	Dholpur Karauli	↓	↓	↓
40	CIEG	Telangana	Kawal	-	↓	↓
41	WG	Karnataka	Bandipur	+	+	+
42	WG	Karnataka	Bhadra	+	↓	+
43	WG	Karnataka	Kali	↓	↓	↓
44	WG	Karnataka	Nagarhole	+	+	+
45	WG	Karnataka	Biligiri Ranganatha Temple	+	+	+
46	WG	Kerala	Periyar	↓	↓	+
47	WG	Kerala	Parambikulam	↓	↓	+
48	WG	Tamil Nadu	Kalakad Mundanthurai	↓	↓	+
49	WG	Tamil Nadu	Anamalai	↓	↓	+
50	WG	Tamil Nadu	Mudumalai	+	+	+
51	WG	Tamil Nadu	Sathyamangalam	+	+	+
52	WG	Tamil Nadu	Srivilliputhur Megamalai	↓	↓	+
53	CIEG	Telangana	Amrabad	↓	↓	↓
54	SHGP	Bihar	Valmiki	+	+	+
55	SHGP	Uttar Pradesh	Dudhwa	+	+	+
56	SHGP	Uttar Pradesh	Pilibhit	+	+	+
57	SHGP	Uttarakhand	Corbett	+	+	+
58	SHGP	Uttarakhand	Rajaji (East)	+	+	+
	SHGP	Uttarakhand	Rajaji (West)	↓	+	↓

* SHGP- Shivalik Hills & Gangetic Plains; CIEG- Central India & Eastern Ghats; WG- Western Ghats; NE- Northeastern Hills & Brahmaputra Floodplains; SB- Sundarbans

04. THE SOURCE-SINK NETWORK

India's tiger conservation programme has achieved remarkable success in recovering tiger populations across several landscapes. While some tiger reserves now support high density of tigers, others continue to remain under-populated despite possessing suitable habitat and prey resources. This uneven distribution of tiger populations across the country presents both a challenge and an opportunity for conservation planning.

Historically, tiger reserve management has focused primarily on individual protected areas. However, tigers function as components of larger ecological systems connected through dispersal, gene flow, and demographic exchange. Long-term conservation success therefore depends not only on the protection of individual reserves but also on the maintenance of a connected network of source populations, recipient landscapes, corridors, and dispersal habitats.

Source—Sink Dynamics

Tiger populations are not evenly distributed across landscapes. Some reserves consistently produce dispersing individuals that disperse into surrounding areas, while others remain dependent on immigration or active management interventions to sustain viable populations.

Source Landscapes:
Source landscapes are reserves and associated forest complexes that support stable breeding populations and regularly produce dispersing tigers. These landscapes are characterized by:

- High prey abundance
- Effective protection
- Stable breeding populations
- High recruitment rates
- Population levels approaching ecological carrying capacity

Source landscapes serve as the engines of tiger recovery across larger landscapes by supplying dispersing individuals that recolonise vacant habitats and strengthen neighbouring populations.

Recipient Landscapes:
Recipient landscapes are reserves that possess ecological potential to support larger tiger populations but are currently limited by low tiger numbers, prey depletion, isolation, or historical population declines.

Basic Ecological Considerations for Tiger Recovery and Management

Tiger conservation and recovery planning must be guided by fundamental ecological principles governing habitat use, prey requirements, territoriality, and population dynamics. As an apex predator, the tiger is highly dependent on habitat quality and prey abundance (Jhala *et al.*, 2025), making it an effective indicator of ecosystem health.

PREY REQUIREMENTS

The abundance and distribution of tigers are closely linked to the availability of large ungulate prey. An adult tiger typically makes about 50-60 kills per year (Miller *et al.*, 2013; Karanth *et al.*, 2017), which translates to 500-700 prey in a lifetime. Consequently, prey recovery often precedes tiger recovery, and habitats with inadequate prey populations are unlikely to support stable tiger populations regardless of habitat extent.

POPULATION STRUCTURE AND VIABILITY

A viable tiger population requires more than the mere presence of tigers; it must contain sufficient breeding individuals to ensure long-term persistence. A population of approximately 20 breeding females (Gopal *et al.*, 2007; Yumnam *et al.*, 2014; Bisht *et al.*, 2019; Jhala *et al.*, 2021) provides the foundation for demographic stability. Larger populations connected to neighbouring habitats are more resilient to stochastic events, genetic isolation, and local extinctions.

HOME RANGE AND LAND-TENURE DYNAMICS

Tigers are solitary carnivores that maintain exclusive territories, the size of which is strongly influenced by prey density and habitat productivity. Female territories are primarily determined by resource availability and the requirements of cub rearing, whereas male territories are structured around access to females. Consequently, male home ranges are larger than those of females and often encompass the territories of multiple breeding females (Goodrich *et al.*, 2022). In India, tiger home ranges range from as small as 10-20 km^2, in high density areas, to over 80-100 km^2 in low density habitats (Chundawat *et al.*, 2002; Sankar *et al.*, 2010; Jhala *et al.*, 2021).

TERRITORIALITY

Territoriality is a key mechanism regulating tiger populations. Adult tigers actively defend territories against individuals of the same sex through scent marking, scraping, vocalization, and direct confrontation. Resident males generally tolerate multiple females within their territories but exclude competing males. This territorial system naturally regulates tiger density and ensures access to prey and breeding opportunities.

DISPERSAL AND LANDSCAPE CONNECTIVITY

Sub-adult tigers disperse from their natal areas upon attaining independence. Dispersal generally occurs from high-density source populations to lower-density surrounding habitats. Young females tend to settle near their natal ranges, whereas males often disperse over much greater distances in search of territories. Functional corridors and connected habitats are therefore essential for maintaining genetic exchange and enabling population expansion. In fragmented landscapes, dispersing tigers may enter human-dominated areas where mortality risks are significantly higher.

MANAGEMENT IMPLICATIONS

The ecological characteristics of tigers have important implications for conservation planning. Recovery efforts must focus on restoring habitat quality, increasing prey abundance, maintaining sufficient space for territorial establishment, and securing landscape connectivity. Since tiger populations are regulated by prey availability, territorial behaviour, and dispersal dynamics, successful recovery depends on creating conditions that support breeding females, resident males, and safe dispersal pathways across the wider landscape.

05. POTENTIAL SOURCE SITES

Several tiger reserves in India currently support high and stable tiger populations, sustained by suitable habitat conditions, abundant prey populations, and effective protection measures. Many of these reserves have exhibited consistent population growth and recruitment across successive cycles of the All India Tiger Estimation, indicating long-term ecological stability. Such reserves represent important source populations and can play a crucial role in active management programmes aimed at recovering tiger populations in low-density, depleted, or locally extinct tiger reserves. Through scientifically planned supplementation and reintroduction efforts, these source populations can facilitate assisted dispersal, accelerate population recovery, strengthen demographic and genetic connectivity, and contribute to the establishment of resilient tiger metapopulations. The following sections describe potential source tiger reserves across different landscapes and outline management considerations necessary to sustain their role as long-term source populations.

1. Corbett Tiger Reserve, Uttarakhand			
Landscape	Shivalik Hills and Gangetic Plains		
Status	Tiger +	Prey +	Habitat +
Corbett Tiger Reserve supports one of the highest tiger populations and densities in India, making it a globally significant stronghold for tiger conservation within the landscape. The reserve maintains abundant prey populations, and the habitat comprises a diverse mosaic of sal forests, riverine forests, grasslands, and perennial water sources that support high ecological productivity and biodiversity. Corbett functions as a major source population, contributing dispersing tigers to adjoining forest divisions and protected areas, thereby facilitating population expansion, genetic exchange, and long-term connectivity across the broader landscape. Several adjoining forest divisions also support relatively high tiger densities and populations.			
Tiger Population (AITE, 2022) (SE±)	260 (0.4)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	14.65 (0.92)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	56.72 (3.69)	
	Sambar	9.79 (0.89)	
	Barking deer	3.004 (0.4)	
	Wild pig	11.38 (1.08)	

2. Pilibhit Tiger Reserve, Uttar Pradesh			
Landscape	Shivalik Hills and Gangetic Plains		
Status	Tiger +	Prey +	Habitat +
Pilibhit Tiger Reserve supports a high and growing tiger population sustained by productive Terai habitats, abundant prey populations, extensive grasslands, and effective protection measures. Its strategic location along the India—Nepal border and ecological connectivity with Dudhwa Tiger Reserve, Kishanpur Wildlife Sanctuary, Katarniaghat Wildlife Sanctuary, and Nepal's protected areas facilitate natural dispersal and genetic exchange across the broader Terai Arc Landscape. Over the cycles, Pilibhit has demonstrated consistent population growth and has become an important source population within the landscape. Tigers from Pilibhit have dispersed into adjoining forest divisions and territorial landscapes, contributing to the expansion of tiger occupancy beyond protected area boundaries.			
Tiger Population (AITE, 2022) (SE±)	63 (0.01)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	5.84 (0.75)		
Density Category	High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	37.67 (5.54)	
	Nilgai	7.29 (1.55)	
	Wild pig	13.46 (1.55)	
	Other prey species	Sambar, Barking deer, Hog deer and Barasingha	

3. Dudhwa Tiger Reserve, Uttar Pradesh			
Landscape	Shivalik Hills and Gangetic Plains		
Status	Tiger +	Prey +	Habitat +
Dudhwa Tiger Reserve comprises a mosaic of productive Terai grasslands, moist deciduous forests, wetlands, and riverine habitats that support a healthy tiger population and a diverse preybase. Together with Kishanpur and Katarniaghat Wildlife Sanctuary, Dudhwa forms a large conservation complex that facilitates tiger dispersal and genetic exchange within the Terai Arc Landscape and across the India—Nepal border. Dudhwa has a growing tiger population and has consistently contributed dispersing individuals to adjoining habitats, including territorial forest divisions and connected protected areas. Its ecological connectivity with Pilibhit and Nepal's protected areas enables landscape-scale population dispersal and enhances long-term population resilience.			
Tiger Population (AITE, 2022) (SE±)	135 (0.07)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	Dudhwa NP		4.53 (0.77)
	Katerniaghat WLS		7.69 (1.04)
	Kishenpur WLS		6.10 (0.96)
Density Category	High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Data deficient for analysis		
Prey species	Chital, Sambar, Barasingha, Barking deer, Hog deer, Nilgai and Wild pig		

4. Valmiki Tiger Reserve, Bihar			
Landscape	Shivalik Hills and Gangetic Plains		
Status	Tiger +	Prey +	Habitat +
Valmiki Tiger Reserve, located in the northernmost part of Bihar along the India—Nepal border, comprises extensive tracts of sal forests, riverine habitats, and grasslands that support a growing tiger population and a diverse prey base. The reserve shares contiguous forest connectivity with Nepal's Chitwan—Parsa complex, facilitating transboundary movement and genetic exchange of tigers across the landscape. Over successive assessment cycles, tiger occupancy and abundance in Valmiki have shown positive trends, supported by improved protection, habitat management, and enhanced landscape connectivity. Although Valmiki falls within the medium tiger density category, it supports a consistently growing and demographically stable tiger population, making it an important source population in the eastern Terai Landscape.			
Tiger Population (AITE, 2022) (SE±)	54 (0.2)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	4.32 (0.06)*		
Density Category	Medium		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	5.81 (0.73)	
	Sambar	2.42 (0.35)	
	Barking deer	1.08 (0.17)	
	Wild pig	3.36 (0.48)	
	Nilgai	1.89 (0.38)	
Other prey species	Gaur and Hog deer		

*Tiger numbers have significantly increased over the years. Presently, the tiger population in Valmiki Tiger Reserve is nearly 65 tigers (based on information from field).

5. Ranthambhore Tiger Reserve, Rajasthan			
Landscape	Central India and Eastern Ghats		
Status	Tiger +	Prey +	Habitat +
Ranthambore Tiger Reserve is one of India's most important source populations for tiger conservation in the semi-arid, dry-deciduous forest landscapes of northwestern India. The reserve supports a well-established breeding population of tigers sustained by a healthy prey base comprising sambar, chital, nilgai, wild pig, and other ungulates. The reserve has played a pivotal role in the recovery and expansion of tiger populations across the Rajasthan landscape. Dispersing tigers from Ranthambore have naturally colonized surrounding habitats, including Kuno National Park, Ramgarh Vishdhari, Mukundara Hills and Dholpur Karauli Tiger Reserve, and nearby forested areas.			
Tiger Population (AITE, 2022) (SE±)	57 (0.13)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	9.6 (1.27)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	8.01 (0.88)	
	Sambar	4.44 (0.68)	
	Nilgai	15.74(1.06)	
	Wild pig	5.78 (0.8)	

6. Bandhavgarh Tiger Reserve, Madhya Pradesh			
Landscape	Central India and Eastern Ghats		
Status	Tiger +	Prey +	Habitat +
Bandhavgarh Tiger Reserve lies along the northern slopes of the eastern Satpura hill range and supports a diverse mosaic of habitats, including moist peninsular low-level Sal forests, northern dry mixed deciduous forests, dry deciduous scrub, grasslands, and moist mixed deciduous forests. The reserve sustains one of the highest prey densities in the Central Indian landscape and supports a robust tiger population, making it an important source population for tiger conservation. Bandhavgarh plays a critical role in maintaining regional tiger metapopulation dynamics through its connectivity with Sanjay—Dubri and Achanakmar Tiger Reserves. These forest corridors facilitate tiger dispersal, genetic exchange and population persistence across the landscape.			
Tiger Population (AITE, 2022) (SE±)	135 (1.07)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	7.5 (0.65)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	46.26 (2.05)	
	Sambar	3.37 (0.41)	
	Nilgai	1.63 (0.2)	
	Wild Pig	3.89 (0.51)	
Other prey species	Gaur and Barking deer		

7. Pench Tiger Reserve, Madhya Pradesh			
Landscape	Central India and Eastern Ghats		
Status	Tiger +	Prey +	Habitat +
Pench Tiger Reserve, located in the northern part of the Pench landscape in Madhya Pradesh, comprises tropical dry and moist deciduous forests and supports high ungulate densities. The strong prey base sustains a high density of breeding tigers, making Pench an important source population in the Central Indian landscape. The reserve shares a contiguous boundary with Pench (Maharashtra) and maintains connectivity with Kanha, Satpura, Navegaon—Nagzira, Bor, and Melghat Tiger Reserves, facilitating tiger dispersal and genetic exchange. However, the Pench—Satpura and Pench—Navegaon—Nagzira corridors contain highly fragmented forest patches that require targeted management interventions to maintain functional connectivity.			
Tiger Population (AITE, 2022) (SE±)	77 (0.31)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	5.50 (0.6)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	53.97 (2.55)	
	Sambar	9.18 (0.73)	
	Nilgai	15.2 (1.41)	
	Gaur	3.4 (0.59)	
	Wild pig	12.47 (1.74)	

8. Tadoba-Andhari Tiger Reserve, Maharashtra			
Landscape	Central India and Eastern Ghats		
Status	Tiger +	Prey +	Habitat +
Tadoba—Andhari Tiger Reserve supports a growing tiger population. The reserve comprises a mosaic of dry deciduous forests, bamboo-dominated habitats, grasslands, and water bodies that sustain a robust preybase. Over the past cycles, Tadoba has demonstrated sustained population growth and high levels of recruitment, resulting in the expansion of tiger occupancy beyond the reserve into adjoining territorial forest divisions and connected tiger reserves. The reserve now functions as the nucleus of a larger tiger conservation landscape, supporting extensive dispersal and demographic connectivity across eastern Maharashtra and adjoining regions.			
Tiger Population (AITE, 2022) (SE±)	97 (0.22)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	6.33 (0.64)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Encounter rate (per km) (AITE, 2022) (SE±)	Chital	0.0553 (±0.0119)	
	Sambar	0.0592 (±0.0108)	
Other prey species	Barking deer, Gaur, Nilgai and Wild pig		

9. Pench Tiger Reserve, Maharashtra			
Landscape	Central India and Eastern Ghats		
Status	Tiger +	Prey +	Habitat +
Pench Tiger Reserve is located in the Satpura—Maikal hills of Maharashtra and falls within the Central Highlands biogeographic province. The reserve is dominated by Southern Tropical Dry Deciduous forests. Together with Pench Tiger Reserve (Madhya Pradesh), it forms a single and contiguous tiger population. Pench is connected to the larger Eastern Vidarbha and Kanha—Achanakmar landscapes, facilitating tiger dispersal and genetic exchange. However, increasing infrastructure development within the Vidarbha landscape poses a potential threat to connectivity with adjoining tiger reserves and may impede long-term dispersal and gene flow.			
Tiger Population (AITE, 2022) (SE±)	48 (0.43)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	5.11 (0.74)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	11.48 (1.25)	
	Sambar	3.61 (0.44)	
	Nilgai	6.46 (0.79)	
Other prey species	Gaur, Barking deer and Wild pig		

10. Bandipur Tiger Reserve, Karnataka			
Landscape	Western Ghats		
Status	Tiger +	Prey +	Habitat +
Bandipur Tiger Reserve, located in Karnataka, forms part of the largest contiguous tiger habitat in southern India. The reserve supports one of the highest tiger populations and densities in the Western Ghats due to its extensive habitat, abundant prey base, and strong protection regime. Owing to the large and well-connected nature of the landscape, Bandipur regularly contributes dispersing individuals to adjoining protected areas and forest divisions, facilitating demographic stability and genetic exchange across southern India. The reserve therefore plays a critical role in maintaining metapopulation dynamics and enhancing the long-term resilience of tiger populations throughout the Western Ghats.			
Tiger Population (AITE, 2022) (SE±)	150 (0.5)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	9.50 (0.77)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	25.91 (1.78)	
	Sambar	4.18 (0.45)	
Other prey species	Gaur, Barking deer and Wild pig		

11. Nagarhole Tiger Reserve, Karnataka			
Landscape	Western Ghats		
Status	Tiger +	Prey +	Habitat +
Nagarhole Tiger Reserve in Karnataka is one of the most productive tiger habitats in the world and serves as a major source population within the Western Ghats landscape. The reserve supports exceptionally high tiger densities owing to its extensive forest cover, abundant prey populations, perennial water availability, and effective protection. As a result, Nagarhole consistently produces dispersing individuals that contribute to the maintenance and recovery of tiger populations across the broader Nilgiri—Western Ghats landscape. Its strong ecological connectivity with adjoining protected areas facilitates natural dispersal, demographic exchange, and genetic flow, making Nagarhole a critical source for sustaining regional metapopulation dynamics.			
Tiger Population (AITE, 2022) (SE±)	141 (0.8)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	11.15 (0.95)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	25.91 (1.78)	
	Sambar	4.18 (0.45)	
Other prey species	Gaur and Wild pig		

12. Mudumalai Tiger Reserve, Tamil Nadu			
Landscape	Western Ghats		
Status	Tiger +	Prey +	Habitat +
Mudumalai Tiger Reserve in Tamil Nadu forms an integral part of the Nilgiri landscape, one of the largest and most contiguous tiger habitats in the world. The reserve is connected with Bandipur, Nagarhole, Wayanad, and Sathyamangalam, enabling extensive movement of tigers across state boundaries. Supported by a high prey base, Mudumalai sustains a healthy breeding tiger population and contributes dispersing individuals to the broader Western Ghats metapopulation. Its strategic location at the junction of the Western and Eastern Ghats makes it particularly important for maintaining landscape connectivity and facilitating genetic exchange among tiger populations.			
Tiger Population (AITE, 2022) (SE±)	114 (0.4)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	7.72 (0.72)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	56.41 (4.75)	
	Sambar	4.44 (0.6)	
	Gaur	7.45 (1)	
Other prey species	Barking deer and Wild pig		

13. Kaziranga Tiger Reserve, Assam			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Status	Tiger +	Prey +	Habitat +
Kaziranga Tiger Reserve in Assam is one of the most productive tiger habitats in the world and serves as a critical source population within the North East Hills and Brahmaputra Flood Plains Landscape. Its extensive alluvial grasslands, wetlands, and riverine forests support high prey biomass, enabling the reserve to sustain one of the highest tiger densities globally. Beyond its role as a stronghold for tigers, Kaziranga contributes to regional population recovery through dispersal and genetic exchange, with significant conservation linkages to the Karbi Anglong hills and adjoining forest landscapes.			
Tiger Population (AITE, 2022) (SE±)	104 (0.27)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	13.44 (1.32)		
Density Category	Very High		
Prey Density (per km^2) (AITE, 2022) (SE±)	Hog deer	49 (11.82)	
Other prey species	Barasingha, Sambar, Wild pig, Barking deer and Wild buffalo		

Recommended Management Interventions:

- Strong protection and anti-poaching measures should be maintained to secure habitat quality, prey populations, and breeding tiger populations, to ensure the long-term persistence of source populations.
- Other high-density reserves such as Panna, Kanha, Satpura, and Manas may also be considered as alternative source sites for tiger supplementation programmes, subject to scientific assessment.
- The selection of individuals for translocation should be guided by rigorous demographic, genetic, behavioural, and health assessments to ensure that source population viability is not compromised and that translocation objectives are achieved effectively.
- Human—tiger conflict management should be strengthened in source landscapes and adjoining territorial divisions through the establishment of rapid response teams, deployment of early warning systems, enhancement of rescue and veterinary infrastructure, and implementation of community awareness activities and compensation mechanisms.
- Natural dispersal corridors connecting source populations with adjoining habitats should be secured and maintained through active monitoring, protection, mitigation of roads, railways, transmission lines, canals, and other linear infrastructure intersecting these corridors.
- Dispersing tigers in surrounding forest divisions and corridor habitats should be regularly monitored to better understand movement patterns, facilitate coexistence, and support landscape-scale conservation planning.
- Core-buffer management should be prioritised to decrease the likelihood of human-wildlife conflict.

06. POTENTIAL RECIPIENT SITES

Potential recipient sites identified for tiger recovery occur at different stages along the ecological recovery continuum and are characterized by varying constraints related to habitat quality, prey abundance and landscape connectivity. While some reserves possess suitable habitat and prey populations but support low tiger densities, others may require targeted habitat restoration, prey recovery, or strengthened protection measures before they can support viable tiger populations. Consequently, management interventions should be tailored to the specific ecological and management challenges of each site. Tiger reintroduction and supplementation programmes in these landscapes should be undertaken only after rigorous scientific assessment of habitat suitability, prey availability, population viability, protection status, socio-economic considerations, and long-term management capacity. The objective should not merely be the release of tigers, but the establishment of self-sustaining populations that are demographically stable, genetically viable, and integrated within the broader tiger metapopulation. Careful planning, phased implementation, and long-term monitoring are therefore essential to ensure successful population recovery and long-term persistence of tigers in these recipient landscapes.

The following section highlights tiger reserves that require priority active management interventions to facilitate ecological recovery and create conditions conducive to the establishment and long-term persistence of viable tiger populations. Depending on the stage of recovery and site-specific constraints, assisted dispersal through supplementation or reintroduction may be undertaken in a phased manner following rigorous scientific assessment, planning, and preparedness.

1. Guru Ghasidas-Tamor Pingla Tiger Reserve, Chhattisgarh			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Guru Ghasidas—Tamor Pingla Tiger Reserve comprises extensive tracts of tropical moist and dry deciduous forests interspersed with grasslands and riverine habitats. The prey base includes chital, sambar, nilgai, wild pig, barking deer, and gaur; however, prey abundance in several parts of the reserve remains relatively low. Guru Ghasidas—Tamor Pingla is strategically located within a larger forested landscape and maintains connectivity with Sanjay-Dubri Tiger Reserve in Madhya Pradesh, Palamau Tiger Reserve in Jharkhand, and other adjoining forest divisions of Chhattisgarh, facilitating tiger movement and genetic exchange across the landscape.			
Limiting Factors	Low prey abundance, fragmented connectivity with neighbouring reserves and mining pressure		
Tiger Population (AITE, 2022)	Not estimated (New Tiger Reserve)		
Density Category	Low		
Prey Species	Chital, Sambar, Nilgai, Barking Deer, Gaur and Wild Pig		

2. Udanti Sitanadi Tiger Reserve, Chattisgarh			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Udanti—Sitanadi Tiger Reserve, located in Gariaband and Dhamtari districts of Chhattisgarh, comprises tropical Sal and southern tropical dry deciduous forests. The reserve supports an extremely low tiger population, with only occasional records confirmed through camera trapping and genetic sampling. Prey abundance is low due to high biotic pressure and hunting pressure.			
Limiting Factors	Left-wing extremism in past and protection, habitat degradation and encroachment, fragmented connectivity and low prey abundance		
Tiger Population (AITE, 2022)	1		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Sambar, Gaur, Nilgai, Barking Deer and Wild pig		

3. Indravati Tiger Reserve, Chattisgarh			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Indravati Tiger Reserve is characterized by tropical moist and dry deciduous forests interspersed with bamboo brakes and grasslands. It supports a highly vulnerable tiger population, currently represented by only a single known individual. The reserve is connected to the larger forested landscapes of Chhattisgarh, Maharashtra, Odisha, and Telangana through the Dandakaranya region, providing potential for landscape-level connectivity and wildlife movement. However, these corridors are increasingly fragmented due to linear infrastructure and anthropogenic pressures.			
Limiting Factors	Left-wing extremism in past and protection, habitat degradation and encroachment, hunting and low prey abundance		
Tiger Population (AITE, 2022)	1		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Sambar and Wild pig		

4. Palamau Tiger Reserve, Jharkhand			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Palamau Tiger Reserve, located in the Chota Nagpur Plateau of Jharkhand, comprises extensive tracts of tropical dry and moist deciduous forests interspersed with bamboo patches, grasslands, and riverine habitats. Historically, Palamau supported a viable tiger population and was among the first reserves included under Project Tiger. However, tiger numbers have declined significantly over time due to a combination of protection challenges, prey depletion, and anthropogenic pressures. Initiatives to establish a tiger population, including prey augmentation efforts and translocation of tigers, are being undertaken for the recovery of tigers in Palamau.			
Limiting Factors	Left-wing extremism in past and protection, habitat degradation, biotic pressure and low prey abundance		
Tiger Population (AITE, 2022)	1		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Gaur, Barking deer, Nilgai and Wild pig		

5. Satkosia Tiger Reserve, Odisha			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Satkosia Tiger Reserve contains extensive tracts of dry deciduous forests interspersed with riverine habitats along the Mahanadi River. Historically, the reserve supported a viable tiger population and served as an important link between the tiger populations of Central India and the Eastern Ghats. However, the reserve currently does not support a resident tiger population. Although tiger reintroduction efforts were initiated in the past, the programme did not achieve the intended outcomes due to a combination of management and social challenges.			
Limiting factors	Low prey abundance, high dependency of local people on forest resources, hunting and poaching, and lack of connectivity with source population		
Tiger Population (AITE, 2022)	0		
Density Category	No tiger		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Encounter Rate (individuals per km) (AITE, 2022) (SE±)	Sambar	0.0702 (0.0348)	
Other prey species	Gaur, Barking deer and Wild pig		

6. Kawal Tiger Reserve, Telangana			
Landscape	Central India and Eastern Ghats		
Stage of Recover	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Kawal Tiger Reserve is located in northern Telangana, comprises extensive tracts of tropical dry deciduous forests, teak-dominated woodlands, bamboo patches, and riverine habitats. The reserve occupies a strategically important position between the tiger populations of central India and the Eastern Ghats and is connected to the Tadoba—Andhari landscape through a network of fragmented forested corridors across Maharashtra and Telangana. Although Kawal historically supported tigers and continues to receive dispersing individuals from neighbouring source populations, the reserve currently does not have any resident tigers.			
Limiting factors	Low prey abundance and fragmented connectivity		
Tiger Population (AITE, 2022)	0		
Density Category	No Tiger		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	3.9 (0.36)	
	Nilgai	4.17 (0.31)	
	Wild pig	3.5 (0.92)	
Other prey species	Sambar, chousingha and gaur		

7. Mukundara Hills Tiger Reserve, Rajasthan			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Mukundara Hills Tiger Reserve, located in southeastern Rajasthan, occupies a strategically important position within the northwestern tiger landscape. The reserve comprises a mosaic of dry deciduous forests, riverine habitats associated with the Chambal River system, and rugged hill terrain that provides suitable habitat for tigers and their prey. The reserve currently supports a small tiger population and remains dependent on tiger and prey augmentation to achieve long-term population establishment.			
Limiting factors	Low prey abundance, fragmented connectivity to source and shape of the reserve		
Tiger Population	1*		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Sambar, Nilgai and Wild pig		

*Subsequent reintroduction efforts increased the tiger population to 7 (as we have mentioned for Ramgarh Visdhari and Madhav)

8. Ramgarh Vishdhari Tiger Reserve, Rajasthan			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Ramgarh Vishdhari Tiger Reserve, located in southeastern Rajasthan, forms an important component of the Ranthambore landscape and serves as a critical habitat link between Ranthambore Tiger Reserve and the forests of Mukundra Hills. The reserve consists primarily of dry deciduous forests, scrub woodlands, grasslands, and riverine habitats that support a diverse assemblage of wildlife. Historically, the area supported tiger movement and occupancy, and in recent years, dispersing tigers from Ranthambore have naturally colonized portions of the reserve, demonstrating its ecological suitability and connectivity within the broader landscape.			
Limiting factors	Low prey abundance, degraded habitat and fragmented connectivity with source		
Tiger Population	1*		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Sambar, Nilgai and Wild pig		

*Tiger augmentation efforts in Ramgarh Vishdhari Tiger Reserve have led to an increase in the tiger population to 8 individuals (based on information from the field).

9. Dholpur Karauli Tiger Reserve, Rajasthan			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Dholpur—Karauli Tiger Reserve occupies a strategically important position in eastern Rajasthan across the Dholpur and Karauli districts. The reserve comprises a mosaic of dry deciduous forests, ravine systems, scrublands, and habitats associated with the Chambal River landscape. The reserve functions as an important spillover and recipient landscape for dispersing tigers from the increasingly saturated Ranthambore population. Moreover, the reserve has already been utilized by dispersing and breeding tigers originating from the Ranthambore landscape. The landscape possesses considerable potential for future tiger recovery.			
Limiting factors	Low prey abundance		
Tiger Population (AITE, 2022)	Not estimated (New Tiger Reserve)		
Density Category	Low		
Prey Species	Chital, Sambar, Nilgai and Wild pig		

10. Madhav Tiger Reserve, Madhya Pradesh			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Madhav Tiger Reserve lies within the northern part of the Central Indian tiger landscape and occupies a strategically important position between the tiger-bearing forests of Rajasthan and Madhya Pradesh. Historically, the area supported tigers but experienced local extinction due to habitat fragmentation, hunting, and anthropogenic pressures. The reserve comprises a mosaic of dry deciduous forests, woodland habitats, grasslands, wetlands, and water bodies such as Sakhya Sagar and Madhav Sagar, providing suitable habitat for tigers and their prey. Efforts have been underway, since 2023, to re-introduce tigers to Madhav and augment habitat to support viable populations of prey and predator.			
Limiting Factors	Low prey abundance, fragmented connectivity and high biotic pressure		
Tiger Population (AITE, 2022)	Not estimated (New Tiger Reserve)*		
Density Category	Low		
Prey Species	Chital, Sambar, Nilgai and Wild pig		

*Tiger reintroduction efforts in Madhav Tiger Reserve have led to an increase in the tiger population to 8 individuals (based on information from the field).

11. Sahyadri Tiger Reserve, Maharashtra			
Landscape	Western Ghats		
Stage of Recovery	Prey and Tiger Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Sahyadri represents the northernmost tiger landscape of the Western Ghats and comprises the contiguous forests of Koyna Wildlife Sanctuary and Chandoli National Park. The reserve contains extensive tracts of high-quality evergreen, semi-evergreen, and moist deciduous forests and has the ecological potential to support a larger tiger population. The reserve occupies a strategically important position within the northern Western Ghats and is connected southwards to the Radhanagari—Goa—Kali landscape through the Sahyadri—Konkan corridor. However, connectivity remains constrained by fragmentation, limiting natural recolonization. Initiatives to establish a viable breeding population, including prey augmentation efforts and translocations of breeding tigresses, are being undertaken for the recovery of tigers in Sahyadri.			
Limiting factors	Low prey abundance, fragmented connectivity and rugged terrain		
Tiger Population (AITE, 2022)	0*		
Density Category	No tiger		
Prey Density (per km^2) (AITE, 2022) (SE±)	Gaur	5.05 (0.83)	
Prey Encounter Rate (individuals per km) (AITE, 2022) (SE±)	Sambar	0.0702 (0.0348)	
Other prey species	Chital, sambar, barking deer and wild pig		

*Tiger reintroduction and sustained efforts in Sahyadri Tiger Reserve have led to an increase in the tiger population to 7 individuals (based on information from the field).

12. Buxa Tiger Reserve			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat ↓
Buxa Tiger Reserve in West Bengal has been identified as a priority recipient landscape for tiger recovery within the North East Hills and Brahmaputra Flood Plains Landscape. The reserve contains extensive tracts of forest habitat and occupies a strategic position along the foothills of Bhutan, providing significant opportunities for landscape-level connectivity and future population recovery. Despite the availability of suitable habitat, resident tiger populations are currently absent, while prey populations remain below ecological potential, limiting the reserve's capacity to support a viable breeding population.			
Limiting factors	Low prey abundance, fragmented connectivity and biotic pressure		
Tiger Population (AITE, 2022)	1		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022) (SE±)	Wild pig	3 (0.79)	
	Barking deer	6 (0.97)	
Other prey species	Chital, hog deer, sambar and gaur		

13. Dampa Tiger Reserve			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger -	Prey ↓	Habitat +
Dampa Tiger Reserve contains extensive tracts of tropical evergreen and semi-evergreen forests with suitable habitat capable of supporting a viable tiger population. However, despite the availability of habitat, tiger populations are currently absent, and prey abundance remains below ecological potential due to historical hunting pressure and other anthropogenic factors. Dampa occupies a strategically important position in the North-East and has the potential to function as a significant recipient landscape.			
Limiting factors	Low prey abundance, rugged terrain, hunting and poaching		
Tiger Population (AITE, 2022)	0		
Tiger Density (per 100 km^2) (AITE, 2022)	NA		
Density Category	Low		
Prey Density (per km2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Barking deer, Sambar, Wild pig		

14. Kamlang Tiger Reserve			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Prey Recovery		
Status	Tiger -	Prey ↓	Habitat +
Kamlang Tiger Reserve comprises extensive tracts of tropical evergreen, semi-evergreen, subtropical broadleaf, and temperate forests across rugged mountainous terrain. The reserve forms part of a large contiguous forested landscape connected with Namdapha Tiger Reserve and adjoining forests extending towards Myanmar, providing important opportunities for landscape-level connectivity and genetic exchange.			
Limiting factors	Naturally low prey abundance and rugged terrain		
Tiger Population (AITE, 2022)	0		
Density Category	No tiger		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey species	Sambar, Barking Deer, and Wild pig		

15. Namdapha Tiger Reserve			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Prey Recovery		
Status	Tiger -	Prey ↓	Habitat +
Namdapha Tiger Reserve, located in eastern Arunachal Pradesh, encompasses one of the largest and most biologically diverse protected areas in India. The reserve contains a remarkable altitudinal gradient ranging from tropical evergreen and semi-evergreen forests to subtropical, temperate, and alpine habitats, forming part of the Indo-Myanmar biodiversity hotspot. Namdapha is connected to extensive forest landscapes in Arunachal Pradesh and Myanmar, providing opportunities for long-term landscape connectivity and genetic exchange.			
Limiting factors	Naturally low prey abundance and rugged terrain		
Tiger Population (AITE, 2022)	1		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey species	Sambar, Hog deer, Barking Deer, and Wild pig		

16. Ranipur Tiger Reserve			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Ranipur Tiger Reserve, located in the Bundelkhand region of Uttar Pradesh, is an important site for tiger population recovery in the northern Central Indian landscape. The reserve lies approximately 150 km from Panna Tiger Reserve and forms part of a broader forested landscape that has historically facilitated tiger movement between Uttar Pradesh and Madhya Pradesh. The reserve comprises a mosaic of tropical dry deciduous forests, scrublands, grasslands, and seasonal riverine habitats that provide suitable ecological conditions for supporting tiger populations.			
Limiting factors	Low prey abundance, fragmented connectivity with source, biotic pressure and habitat degradation		
Tiger Population (AITE, 2022)	4		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Species	Chital, Sambar, Nilgai and Wild pig		

17. Achanakmar Tiger Reserve			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Achanakmar Tiger Reserve, located in Mungeli district of Chhattisgarh, forms part of the Achanakmar—Amarkantak Biosphere Reserve and lies within the Maikal Hills of the Satpura landscape. The reserve comprises dense Sal and teak forests with bamboo thickets and grasslands but supports a relatively low prey base. It is connected to Kanha Tiger Reserve through Phen Wildlife Sanctuary and adjoining forest divisions, while linkages with Bandhavgarh and Sanjay Tiger Reserves are increasingly fragmented by linear infrastructure.			
Limiting factors	Low prey abundance and fragmented connectivity		
Tiger Population (AITE, 2022)	5		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	7.78 (0.82)	
	Gaur	3.77 (0.48)	
Other prey species	Sambar, barking deer and wild pig		

18. Kalakad Mundanthurai Tiger Reserve, Tamil Nadu			
Landscape	Western Ghats		
Stage of Recovery	Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Kalakad—Mundanthurai Tiger Reserve, located at the southern end of the Western Ghats in Tamil Nadu, comprises extensive tracts of tropical evergreen, semi-evergreen, moist deciduous, and montane forests interspersed with grasslands. The reserve forms part of the Agasthyamalai landscape and maintains ecological connectivity with Periyar Tiger Reserve through the Periyar—Srivilliputhur—Megamalai—KMTR forest complex, creating contiguous forested landscape in the southern Western Ghats. Although KMTR supports suitable habitat for tigers, population densities are naturally low due to rugged terrain, dense forest cover, and relatively low prey abundance compared to the high-density tiger landscapes of the central Western Ghats.			
Limiting factors	Naturally low prey abundance, rugged terrain and lack of source population		
Tiger Population (AITE, 2022)	5		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Encounter Rate (individuals per km) (AITE, 2022) (SE±)	Sambar	0.0702 (0.0348)	
Other prey species	Chital, barking deer, gaur, mouse deer and wild pig		

19. Nameri Tiger Reserve, Assam			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Nameri Tiger Reserve, located in Assam at the foothills of the Eastern Himalayas, is characterized by dense forests, grasslands, and the Jia-Bhoroli River. The reserve supports a diverse range of wildlife, including tigers, elephants, and several threatened bird species. Its rich habitat connectivity with neighboring protected areas contributes to long-term ecological resilience and biodiversity conservation. Despite currently supporting relatively low tiger densities, the reserve offers suitable habitat for population recovery and expansion.			
Limiting factors	Naturally low prey abundance, biotic pressure in Sonai-Rupai Wildlife, poaching and precarious connectivity with Kaziranga through river islands		
Tiger Population (AITE, 2022)	3		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022) (SE±)	Barking deer	18 (4.33)	
	Wild pig	19 (6.22)	
Other prey species	Sambar, gaur and hog deer		

20. Pakke Tiger Reserve, Arunachal Pradesh			
Landscape	Northeastern Hills and Brahmaputra Floodplains		
Stage of Recovery	Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Pakke Tiger Reserve is one of the most intact forested landscapes in Northeast India, with high habitat quality, a diverse preybase, and strong connectivity to adjoining protected areas. The reserve supports a resident tiger population and forms part of a larger contiguous conservation landscape. Given its ecological integrity and landscape connectivity, Pakke has significant potential for strengthening tiger populations through targeted conservation interventions.			
Limiting factors	Naturally low prey abundance and precarious connectivity with Kaziranga through river islands		
Tiger Population (AITE, 2022)	6		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Other prey species	Sambar, barking deer, hog deer, wild pig and gaur		

21. Nawegaon Nagzira Tiger Reserve			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Tiger and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Navegaon—Nagzira Tiger Reserve serves as a critical link between the tiger populations of Tadoba—Andhari, Pench, Kanha, and the forests of Chhattisgarh. The reserve comprises a mosaic of dry deciduous forests, wetlands, and bamboo-dominated habitats. Although the reserve supports a resident tiger population and has witnessed increasing tiger occupancy in recent years, tiger densities remain low.			
Limiting factors	Highly fragmented corridor landscape and low prey abundance		
Tiger Population (AITE, 2022) (SE±)	11 (0.12)*		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	0.64 (0.20)		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Encounter Rate (individuals per km) (AITE, 2022) (SE±)	Chital	0.0292 (0.0083)	
	Sambar	0.0146 (0.0061)	
Other prey species	Gaur, Nilgai, Barking deer and Wild pig		

*Tiger augmentation efforts in Nawegaon Nagzira Tiger Reserve have led to an increase in the tiger population to 23 individuals (based on information from the field).

22. Sanjay Dubri Tiger Reserve			
Landscape	Central India and Eastern Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Sanjay—Dubri Tiger Reserve, located in Sidhi and Singrauli districts of Madhya Pradesh, is an important component of the Central Indian tiger landscape. The reserve comprises tropical dry and moist deciduous forests supporting a moderate prey base of chital, sambar, nilgai, wild pig, and other ungulates. It serves as a critical connectivity link between Bandhavgarh and Guru Ghasidas—Tamor Pingla Tiger Reserves through the Shahdol Forest Division, facilitating tiger dispersal and genetic exchange across the landscape. The reserve has benefited from prey recovery initiatives, including gaur reintroduction and chital supplementation from Bandhavgarh Tiger Reserve, aimed at improving prey availability and ecosystem functionality.			
Limiting Factors	High biotic pressure, low prey abundance and fragmented connectivity with source		
Tiger Population (AITE, 2022) (SE±)	16 (0.06)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	0.78 (0.20)		
Density Category	Low		
	Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis	
Encounter rate (per km) (AITE, 2022) (SE±)	Chital	0.1537 (±0.0258)	
	Sambar	0.0199 (±0.0113)	
Other prey species	Barking deer, gaur, nilgai and wild pig		

23. Srivilliputhur Meghamalai Tiger Reserve, Tamil Nadu			
Landscape	Western Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat +
Srivilliputhur—Megamalai Tiger Reserve comprises two ecologically distinct but connected forest blocks within the southern Western Ghats landscape. Srivilliputhur is characterized predominantly by rugged hill ranges, tropical evergreen and semi-evergreen forests, and forms an important connectivity link with the Periyar landscape to the north. In contrast, Megamalai contains a mosaic of evergreen and moist deciduous forests interspersed with tea estates, plantations, and grasslands, and serves as a critical linkage between Periyar and the Kalakad—Mundanthurai Tiger Reserve (KMTR) landscape. Together, these two units create an important corridor network that facilitates tiger movement and genetic exchange across the southern Western Ghats. Although the reserve supports suitable tiger habitat and a resident tiger population, densities remain naturally low due to rugged terrain, dense forest cover, and low prey abundance.			
Limiting Factors	Naturally low prey abundance and rugged terrain		
Tiger Population (AITE, 2022) (Meghamalai)	15		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022) (SE±)	Chital	7.97 (0.95)	
	Sambar	7.91 (1.42)	
	Gaur	11.67 (1.3)	
Other prey species	Barking deer and wild pig		

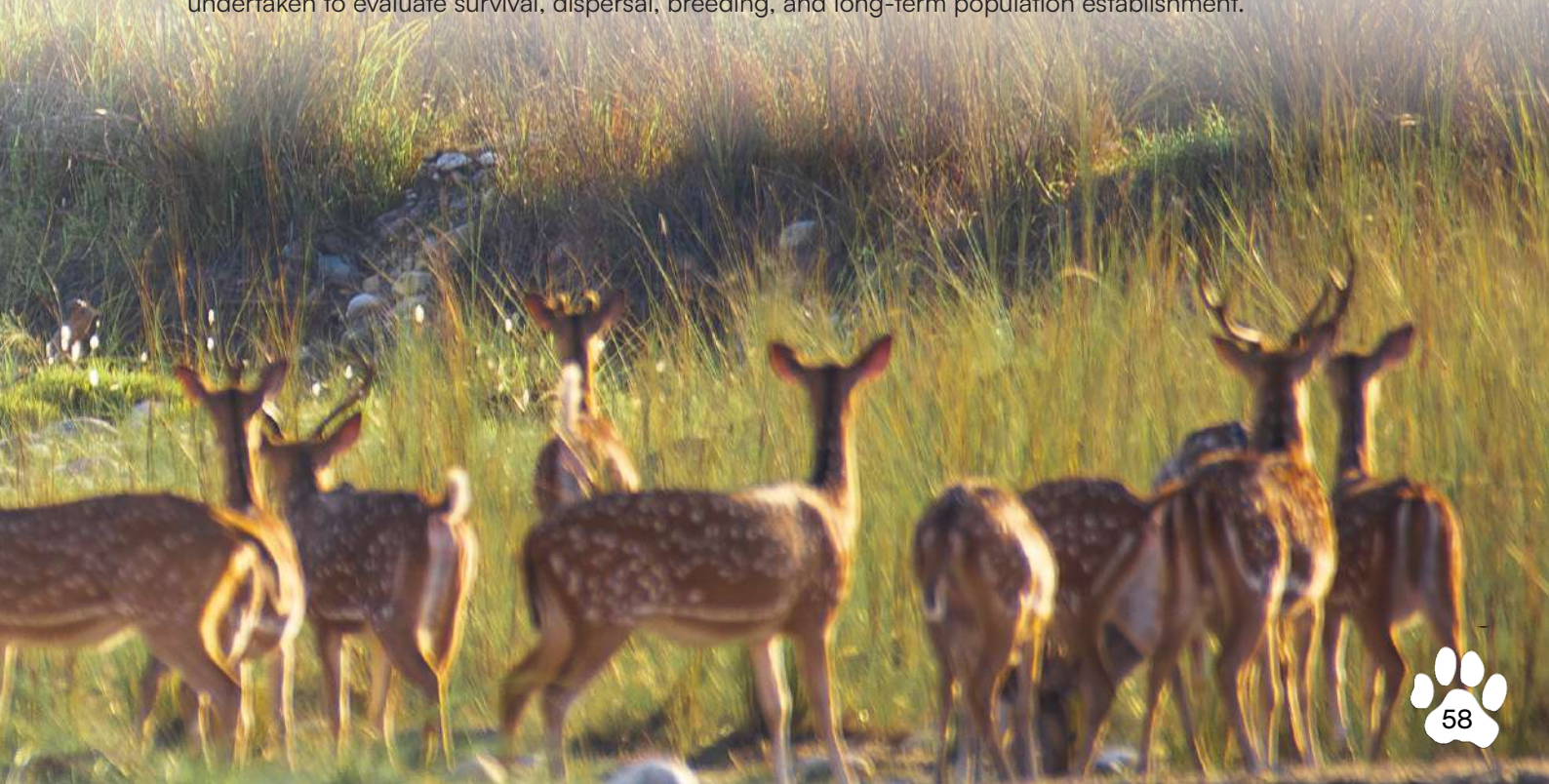
24. Kali Tiger Reserve, Karnataka			
Landscape	Western Ghats		
Stage of Recovery	Habitat and Prey Recovery		
Status	Tiger ↓	Prey ↓	Habitat ↓
Kali Tiger Reserve, located in the central Western Ghats of Karnataka, comprises extensive tracts of tropical evergreen, semi-evergreen, and moist deciduous forests that provide suitable habitat for tigers and their prey. Despite its large area and relatively intact forest cover, tiger densities in Kali remain low.			
Limiting factors	High biotic pressure, low prey abundance, lack of source population in adjoining landscape, fragmented connectivity and very hilly undulating terrain		
Tiger Population (AITE, 2022) (SE±)	17 (0.2)		
Tiger Density (per 100 km^2) (AITE, 2022) (SE±)	0.57 (0.14)		
Density Category	Low		
Prey Density (per km^2) (AITE, 2022)	Data deficient for analysis		
Prey Encounter Rate (individuals per km) (AITE, 2022) (SE±)	Chital	0.0149 (0.0075)	
	Sambar	0.0357 (0.0119)	
Other prey species	Gaur, Barking deer and Wild pig		

25. Rajaji Tiger Reserve, Uttarakhand (Western Part)			
Landscape	Shivalik Hills and Gangetic Plains		
Stage of Recovery	Tiger Recovery		
Status (Western)	Tiger ↓	Prey +	Habitat ↓
Rajaji Tiger Reserve forms a critical component of the Shivalik Hills tiger landscape and possesses substantial potential for tiger population recovery, particularly in its western sector. Although tiger densities in Western Rajaji remain lower than those in the eastern part of the reserve, the area contains extensive tracts of suitable habitat, including sal and riverine forests, grasslands, and perennial water sources. Following the relocation of settlements from key habitats and improvements in protection, habitat conditions have significantly recovered. However, disrupted connectivity with eastern Rajaji and the broader Corbett landscape continues to be a major limiting factor for the recovery and long-term growth of the tiger population in western Rajaji.			
Limiting factors	Disrupted connectivity with eastern Rajaji and Corbett landscape, disturbance due to expanding settlements in adjoining areas and tourism		
Tiger Population (AITE, 2022)	0		

Note:Tiger populations are inherently dynamic, with territorial occupancy, dispersal patterns, and prey—predator relationships continually evolving in response to ecological, climatic, and anthropogenic factors. Consequently, the management recommendations presented in this report are based on the current site conditions and population status. These recommendations should be viewed as adaptive and may require periodic reassessment and modification as environmental conditions, habitat characteristics, and population dynamics change over time.

Recommended Management Interventions:

- Habitat connectivity with adjoining source populations should be strengthened through effective protection of corridor habitats, monitoring of tiger movement, and implementation of appropriate mitigation measures for linear infrastructure and other developmental projects, including roads, railways, transmission lines, canals, mining, industrial and urban expansion, renewable energy projects, and irrigation infrastructure, so as to maintain ecological connectivity and facilitate natural dispersal.
- Micro-cores should be identified within tiger reserves to facilitate the implementation of intensive, site-specific interventions aimed at addressing localized constraints related to habitat quality, prey abundance, protection, and tiger occupancy.
- Prey populations should be improved through targeted management interventions, including strengthened protection, reduction of hunting pressure, grassland management, and habitat improvement measures in core areas.
- Tiger Reserves with 5 or less than 5 tigers (Guru Ghasidas-Tamor Pingla, Udanti SItanadi, Indravati, Palamau, Kamlang, Namdapha, Satkosia, Kawal, Mukundara, Ramgarh Vishdhari, Buxa, Dampa, Ranipur, Achanakmar, Kalakad Mundanthurai and Nameri Tiger Reserves) may be prioritized for tiger re-introduction/augmentation programs, based on scientific assessment and feasibility.
- In landscapes characterized by naturally low prey abundance and rugged terrain, like Kamlang, Namdapha, Dampa, Pakke, Nameri, Kalakad Mundanthurai, Srivilliputhur Meghamalai and Kali Tiger Reserves, detailed ecological assessments should be undertaken to evaluate habitat suitability, prey carrying potential, and the long-term feasibility of tiger reintroduction.
- Voluntary relocation of villages from Critical Tiger Habitats should be prioritized wherever appropriate to create inviolate space and reduce anthropogenic pressures within core areas.
- Community participation, awareness, and stewardship should be strengthened to build local support for tiger recovery and reintroduction programmes and to facilitate long-term coexistence.
- The suitability of recipient sites for tiger reintroduction should be assessed through comprehensive evaluation of habitat quality, prey abundance, protection effectiveness, landscape connectivity, and long-term management capacity.
- Selection of tigers for reintroduction should be guided by scientific assessments of demographic, genetic, behavioural, and health parameters to maximize the probability of successful establishment.
- Adequate rescue, veterinary, quarantine, and post-release monitoring infrastructure should be established prior to implementation of reintroduction programmes.
- Appropriate soft-release facilities should be developed, wherever required, to facilitate acclimatization, monitoring, and successful establishment of released individuals.
- Post-release monitoring using camera trapping, telemetry, and field-based monitoring protocols should be undertaken to evaluate survival, dispersal, breeding, and long-term population establishment.



07. TIGER RESERVES NOT CURRENTLY REQUIRING SUPPLEMENTATION OR REINTRODUCTION

Not all tiger reserves require immediate supplementation or reintroduction of tigers. In several reserves, with low to medium tiger densities, existing tiger populations are naturally regulated by ecological factors such as rugged terrain, low prey abundance, habitat type, or landscape characteristics, while in others, populations may recover through continued protection and natural dispersal from adjoining source areas.

The following reserves currently support low to medium density tiger populations but do not require immediate assisted dispersal interventions and may continue to be managed through habitat protection, connectivity conservation, and adaptive management.

Table 6. List of tiger reserves with expanding or stable tiger populations

S. No.	Landscape	State	Tiger Reserve	Density Class (AITE, 2022)	Stage of Recovery	Key Management Recommendations
1	Central India and Eastern Ghats	Rajasthan	Sariska	Medium	Population Expansion	Continued protection, tiger, prey and habitat monitoring & enhance community participation
2		Madhya Pradesh	Panna*	High	Population Expansion	
3		Madhya Pradesh	Ratapani	High	Population Expansion	
4		Madhya Pradesh	Satpura*	High	Population Expansion	
5		Madhya Pradesh	Kanha*	Very High	Population Expansion	
6		Madhya Pradesh	Veerangana Durgavati**	Low	Tiger & Prey Recovery	Enhance prey base through targeted management, increase protection and strengthen connectivity with source populations
7		Maharashtra	Melghat	Low	Tiger & Prey Recovery	
8		Maharashtra	Bor	Low	Tiger & Prey Recovery	
9		Telangana	Amrabad	Low	Tiger & Prey Recovery	
10		Andhra Pradesh	Nagarjunsagar Srisailam	Low	Population Expansion	
11		Odisha	Similipal	Low	Tiger Recovery	Targeted measures to facilitate population recovery while conserving its distinct genetic characteristics
12	Western Ghats	Tamil Nadu	Sathyamangalam	High	Stable	Continued protection, conflict mitigation
13		Karnataka	BRT	High	Stable	Continued protection and monitoring; strategic invasive species management; and maintain connectivity
14		Karnataka	Bhadra	Medium	Stable	Prey abundance naturally low and rugged terrain, Maintain habitat integrity, prey populations, and landscape connectivity through continued protection and monitoring
15		Tamil Nadu	Anamalai	Low	Stable	
16		Kerala	Parambikulam	Medium	Stable	
17		Kerala	Periyar	Medium	Stable	
18	Northeastern Hills and Brahmaputra Floodplains	Assam	Manas*	High	Population Expansion	Continued protection, tiger, prey and habitat monitoring & enhance community participation
19			Orang*	Very High		

* These sites have a growing tiger population and may be considered as alternate source sites for supplementation of tigers.
**The estimated tiger population as per AITE, 2022 was 5 tigers, however, due to tiger augmentation efforts in Veerangana Durgavati Tiger Reserve, the tiger population has increased to nearly 30 tigers (based on information from the field).

08. ACTIVE MANAGEMENT IN TIGER-BEARING AREAS OUTSIDE TIGER RESERVES

Table 6 : Details of tigers outside tiger reserves as per AITE 2022

S. No.	Parameter	Stats
1	Number of Tiger Reserves	58
2	Total Area under Tiger Reserves	84,487.83 km^2
3	Total Core Area	46,701.29 km^2
4	Total Buffer Area	37,786.54 km^2
5	Total Tiger Population in India (AITE 2022)	3,682
6	Tigers Within Tiger Reserves	2,338
7	Tigers Outside Tiger Reserves	1,344*
8	Tigers Whose Home Ranges Lie Entirely Outside Tiger Reserves	707**
9	Tiger Population in Top 10 Tiger Reserves	1,318
10	Tiger Population in Remaining Tiger Reserves	2,364
11	Tiger Reserves Supporting Fewer than 3 Tigers	12

* Includes tigers occurring in territorial forest divisions, wildlife corridors, and other habitats outside the core areas of tiger reserves.
** Represents tigers whose home ranges lie entirely outside notified tiger reserve boundaries (core + buffer) and do not utilize these protected areas.

India currently supports an estimated 3,682 tigers, of which approximately 2,338 occur within tiger reserves, while about 2,975 utilize tiger reserve habitats including core and buffer areas. However, nearly 30% of the tiger population occurs outside the tiger reserve network. Table 6 provides the details of tigers with core, buffer and outside tiger reserves as per 2022 AITE. The core recommendations for the management of tigers outside tiger reserves are as follows:

As tiger populations continue to recover across several source landscapes, dispersing individuals are increasingly colonizing territorial forest divisions, corridor habitats, and human-dominated landscapes. In many regions, these areas now support resident breeding populations in addition to transient individuals. Consequently, habitat improvement measures aimed at increasing tiger density, such as grassland development, prey augmentation, or habitat enrichment, may be inappropriate and could pose conflict risk in human-dominated areas. These landscapes should not be managed with the same objectives as Critical Tiger Habitats (CTH). Therefore, no habitat improvement interventions should be undertaken in tiger-bearing multiple-use landscapes outside tiger reserves.

The primary management challenge in tiger-bearing areas outside tiger reserves is the increasing interface between humans and tigers. Consequently, active management should focus on strengthening human—tiger conflict response systems. Priority actions include establishment of well-equipped rapid response teams, strengthening rescue and veterinary infrastructure, improving emergency response capabilities, and ensuring timely and transparent compensation mechanisms for livestock depredation, crop damage, and human injury or mortality.

The deployment of modern technologies can significantly improve management effectiveness in these landscapes. AI-enabled early warning systems, camera-based surveillance networks, automated alert mechanisms, drones, thermal imaging devices, GPS-based monitoring systems, and real-time communication platforms can help detect tiger presence near settlements, monitor movement patterns, and provide advance warnings to local communities. These tools allow managers to move from a reactive approach towards proactive conflict prevention. Spatial databases integrating tiger movement records, conflict incidents, livestock depredation events, and habitat-use information can further assist in identifying conflict hotspots and prioritizing interventions.

Maintaining landscape connectivity should remain a central management objective. Many territorial forest divisions function as critical linkages between source populations and recipient landscapes, facilitating dispersal and genetic exchange across larger conservation landscapes. Management efforts should therefore focus on securing ecological corridors, preventing habitat fragmentation, and mitigating the impacts of roads, railways, canals, transmission lines, and other linear infrastructure.

Community participation is fundamental to successful management in human-dominated tiger landscapes. Awareness programmes should improve understanding of tiger behaviour, promote safe practices in tiger-use areas, and build support for conservation initiatives. Local communities can contribute to monitoring tiger presence, disseminating early warnings, supporting conflict mitigation efforts, and maintaining connectivity habitats. Stewardship programmes, livelihood diversification initiatives, and incentive-based conservation approaches can further strengthen coexistence and foster positive attitudes towards wildlife conservation.

Another important aspect of active management in these landscapes is the behavioural ecology of individual tigers. Tigers occupying human-dominated environments are frequently exposed to settlements, livestock, agricultural fields, roads, and regular human activity. As a result, some individuals may become more habituated to human presence and exhibit behavioural patterns that differ from those of tigers occupying core protected habitats. Certain individuals may also become more prone to conflict situations, while others may coexist successfully with minimal interaction despite occupying similar landscapes. Therefore, regular and intensive monitoring of tiger populations in such multi-use landscapes is also critical.

Therefore, active management in tiger-bearing areas outside tiger reserves should focus on enabling coexistence, maintaining connectivity, and supporting landscape-scale conservation. By strengthening conflict response systems, deploying modern technologies, securing dispersal corridors, promoting community stewardship, and incorporating behavioural understanding into management decisions, these landscapes can continue to support a significant proportion of India's tiger population and contribute substantially to the long-term resilience of the national tiger metapopulation.

09. A NATIONAL PERSPECTIVE

India's tiger reserves and associated forested landscapes function as a landscape-scale metapopulation network, in which source populations, recipient landscapes, dispersal corridors, and stepping-stone habitats perform complementary ecological roles. Source populations contribute dispersing individuals that facilitate population recovery and genetic exchange, while recipient landscapes provide opportunities for range expansion, population establishment, and restoration of historical distribution. Corridors and intervening habitats maintain functional connectivity between populations, enabling movement, demographic exchange, and long-term genetic viability across landscapes.

The Central India and Eastern Ghats landscape contains the largest number of reserves requiring active management interventions and therefore represents the highest priority region for population recovery and assisted dispersal programmes. In contrast, the North Eastern Hills and Brahmaputra Floodplains contain extensive habitats with significant potential for future population recovery and range expansion, provided protection, prey recovery, and connectivity are strengthened. The Shivalik Hills—Gangetic Plains and Western Ghats landscapes currently function as major demographic strongholds for tigers in India, supporting several source populations that drive landscape-level persistence and recovery. The Sundarbans represents a unique ecological system characterized by specialized habitat conditions and ecological adaptations, requiring management approaches that are distinct from those applied in other tiger landscapes. Collectively, these landscapes highlight the importance of adopting a coordinated, landscape-level approach to active tiger management, with interventions tailored to the ecological characteristics, recovery stage, and conservation role of each reserve and landscape.

NATIONAL ACTIVE MANAGEMENT FRAMEWORK

Habitat Assessment

Evaluate habitat quality, threats, and restoration needs

Habitat Recovery

Restore vegetation structure, water availability, and ecological processes

Prey Recovery

Enhance prey populations to support tiger persistence

Protection Strengthening

Improve patrolling, monitoring, and threat mitigation

Tiger Recovery

(Natural Disposal / Supplementation / Reinintroduction)

Population Expansion

Increase population size and distribution

Connectivity Restoration

Secure movement corridors between populations

Genetic Exchange

Facilitate gene flow and maintain genetic diversity

Source Population

Establish a viable and self-sustaining breeding population

Landscape-Level Recovery

Achieve long-term ecological resilience across the landscape

10. A LONG-TERM ROADMAP

The long-term conservation and recovery of tiger populations require a structured and adaptive management approach that addresses ecological, social, institutional, and logistical factors simultaneously. Successful tiger conservation extends beyond species protection and depends on maintaining functional ecosystems, securing local community support, strengthening landscape connectivity, and ensuring sustained governance. The following roadmap outlines the key components required for the long-term management and recovery of tiger populations in India.

Habitat Readiness:

The foundation of any tiger recovery programme is the establishment and maintenance of suitable habitat conditions. Habitat readiness involves assessing and augmenting prey populations, ensuring the availability of perennial water sources, maintaining adequate vegetation cover, and strengthening protection measures across the landscape. Ecological assessments should evaluate carrying capacity, habitat quality, prey density, and anthropogenic pressures to determine whether a landscape can support a viable tiger population.

Community Engagement:

Long-term tiger conservation depends heavily on the support and participation of local communities living within and around protected areas. Community engagement programmes should focus on increasing awareness of the ecological and socio-economic benefits of tiger conservation while addressing concerns related to human—wildlife interactions. Conflict mitigation initiatives, livelihood diversification, and the promotion of responsible eco-tourism can strengthen local stewardship of conservation efforts.

Infrastructure and Logistics:

Effective tiger management requires appropriate infrastructure and operational capacity to support monitoring, protection, and conservation actions. Infrastructure requirements may include soft-release enclosures for translocations, veterinary facilities for health assessments and emergency response, surveillance systems, communication networks, and field equipment for monitoring and patrolling. Adequate logistical support ensures that management teams can respond rapidly to emerging challenges, implement conservation interventions efficiently, and maintain high standards of animal welfare and ecological monitoring.

Strengthening Natural Dispersal Pathways:

Landscape connectivity is critical for maintaining genetic exchange and facilitating the natural movement of tigers between habitat patches. Management efforts should identify, protect, and restore ecological corridors that allow dispersing individuals to move safely across the landscape. GIS-based analyses can be used to map movement routes, identify bottlenecks, and prioritize corridor conservation actions. Mitigation measures for roads, railways, and other linear infrastructure can reduce barriers to movement and improve functional connectivity across tiger landscapes.

Genetic Diversity and Population Viability:

Maintaining adequate genetic diversity is essential for ensuring the long-term resilience and adaptive potential of tiger populations. Population viability assessments should be conducted periodically to evaluate extinction risk, demographic stability, and long-term sustainability under different management scenarios. Such analyses support evidence-based decision-making and help identify populations that may require genetic augmentation or connectivity improvements.

Human—Tiger Interface Management:

As tiger populations recover and expand, interactions between tigers and people may increase. Effective conflict management systems are therefore a critical component of long-term conservation planning. Management strategies should include rapid response teams, early-warning systems, conflict monitoring protocols, and timely compensation mechanisms for losses incurred by local communities. Strengthening institutional capacity for conflict mitigation helps reduce retaliatory actions, improves public tolerance for wildlife, and supports coexistence between humans and tigers.

Monitoring and Adaptive Management:

Continuous monitoring is essential for evaluating conservation outcomes and guiding management decisions. Monitoring programmes should track tiger populations, prey abundance, habitat condition, and anthropogenic threats using standardized scientific methodologies. Technologies such as camera trapping, spatially explicit capture—recapture (SECR) analyses, radio telemetry, and the Monitoring System for Tigers—Intensive Protection and Ecological Status (M-STrIPES) provide robust data for assessing population trends and management effectiveness.

Policy and Governance:

Effective tiger conservation requires strong institutional frameworks and coordinated governance mechanisms operating across multiple administrative levels. Long-term success depends on clear policy support, adequate funding, inter-agency collaboration, and coordinated management across state boundaries. Institutionalizing mechanisms for interstate cooperation is particularly important in landscapes where tiger populations and ecological corridors extend across political jurisdictions. Strong governance structures improve implementation efficiency, facilitate information sharing, and ensure continuity of conservation actions over time.

Research and Knowledge Sharing:

Scientific research provides the evidence base necessary for informed management and continuous improvement of conservation strategies. Long-term ecological studies can generate critical information on tiger ecology, prey dynamics, habitat use, disease risks, climate change impacts, and landscape connectivity. Equally important is the dissemination of knowledge through workshops, training programmes, technical exchanges, and collaborative research initiatives.

Towards Vision 2047

India has demonstrated that targeted conservation investments can reverse tiger declines and restore populations across large landscapes. However, the next phase of tiger conservation will require moving beyond reserve-level management towards a landscape-scale approach that actively strengthens ecological connectivity and facilitates the recovery of isolated populations.

The report provides a strategic framework for achieving this objective. By linking strong source populations with priority recovery landscapes through habitat restoration in core areas, prey recovery, connectivity enhancement, and, where necessary, scientifically guided supplementation programmes, the framework seeks to expand the ecological footprint of tiger conservation across the country.

By 2047, as envisioned in the Amrit Kaal Ka Tiger Vision, India should aspire not only to maintain its existing source populations but also to transform several current recipient landscapes into self-sustaining tiger populations. Landscapes such as Buxa, Dampa, Kamlang, Palamau, Guru Ghasidas—Tamor Pingla, Udanti—Sitanadi, Kawal, Satkosia, Madhav, Mukundara Hills, and Ramgarh Vishdhari represent important opportunities for future recovery and range expansion.

The long-term vision is the establishment of a resilient national tiger metapopulation network in which source landscapes, recipient landscapes, corridors, and stepping-stone habitats function as interconnected components of a larger conservation system. Such a network will enhance demographic stability, strengthen genetic exchange, improve ecological resilience to emerging threats, and secure the future of tigers across India's diverse landscapes. The successful implementation of this framework will contribute significantly towards achieving the national conservation goals envisioned for India's centenary year in 2047.

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