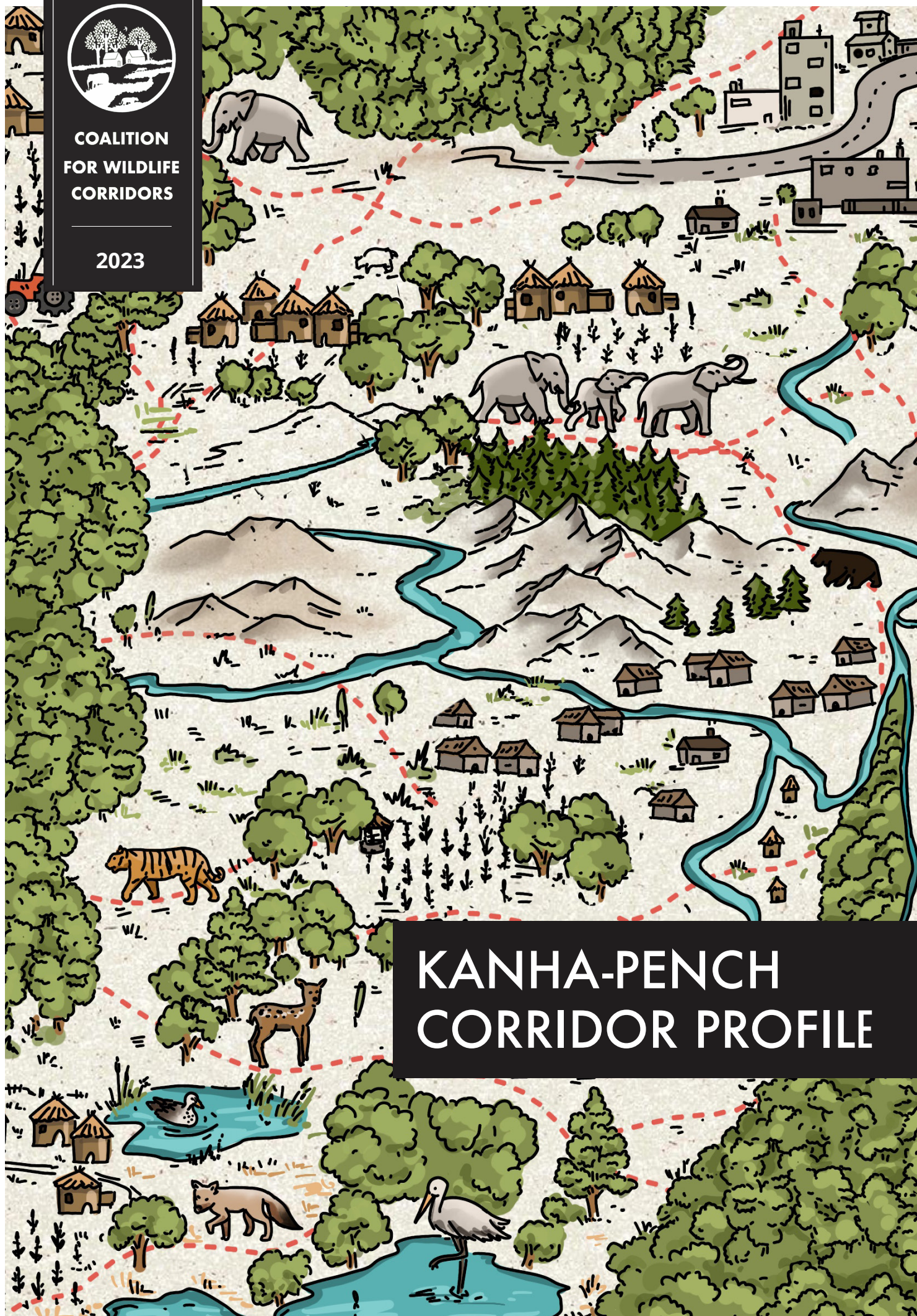




COALITION  
FOR WILDLIFE  
CORRIDORS

2023



# KANHA-PENCH CORRIDOR PROFILE



**Suggested citation:**

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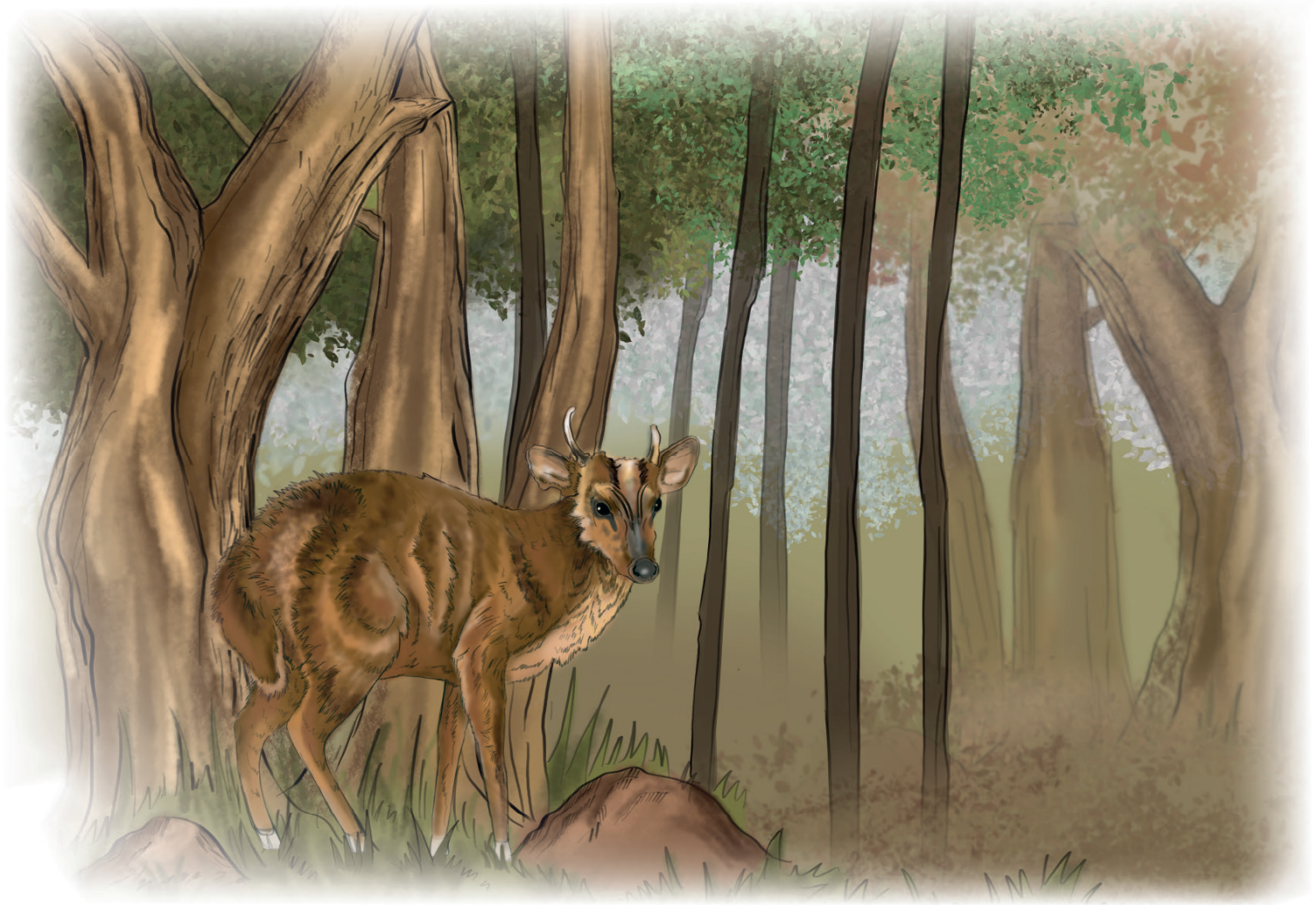
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# KANHA-PENCH CORRIDOR PROFILE



**COALITION  
FOR WILDLIFE  
CORRIDORS**

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# Corridor Overview

The Kanha-Pench Corridor lies in the central Indian state of Madhya Pradesh and connects the Kanha Tiger Reserve (MP) with Pench Tiger Reserve (MP & Maharashtra). Spanning an area of approximately ~5,925 km<sup>2</sup>, it lies in the southern portion of the Satpuda range in Maikal hills. The Kanha-Pench Corridor has been identified as a refuge for several mammals, including the leopard (*Panthera pardus*), tiger (*Panthera tigris*), dhole (*Cuon alpinus*), sloth bear (*Melursus ursinus*), jungle cat (*Felis chaus*), gaur (*Bos gaurus*), sambar (*Rusa unicolour*), chital

(*Axis axis*), and Eurasian otter (*Lutra lutra*). Notably, both Kanha and Pench Tiger Reserves represent the largest source populations for immigrating tigers in the adjoining landscape, making the Kanha-Pench Corridor of critical importance in view of tiger conservation in India. Infrastructure development is posing an increasing threat to the connectivity of this corridor. Immediate threats include development of roads and railway lines, existing mining operations, and an increasing number of hotels and resorts near Kanha and Pench Tiger Reserves.



Area of natural habitat  
High  
70 %



Area under forest department  
Medium  
50 %



Threatened species richness  
Low  
30 species/km<sup>2</sup>



Human population  
Medium  
195 persons/km<sup>2</sup>



Human modification index  
Medium  
0.44



Natural habitat fragmentation index  
Low  
0.87



Landscape complexity index  
Medium  
0.54



Landuse change index  
—  
—

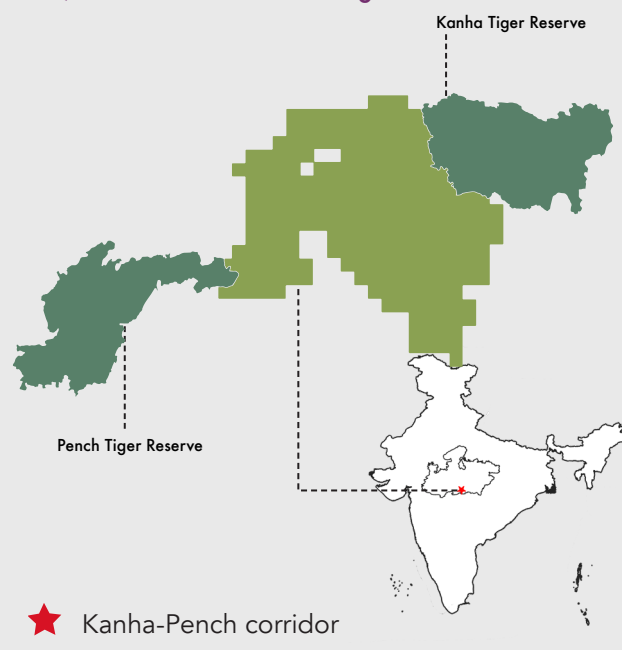
Habitat connected: **Kanha and Pench Tiger Reserves**

Area of corridor: **5,925 km<sup>2</sup>**

Focal species: **Tiger, leopard, sloth bear**

Major threats: **Linear infrastructure; habitat degradation and fragmentation**

Coalition for Wildlife Corridor members: **Wildlife Conservation Trust, World Wide Fund for Nature-India, Network for Conserving Central India**



The indicators provided here are based on the crude boundaries and global datasets and are indicative in nature. Fine-scale data based on ground-truthed locations would provide a more accurate estimate of the indicators. See supplementary information for more details.

# Corridor History

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The famous novel by Rudyard Kipling—*The Jungle Book*—is based in the dense forests of Pench, Kanha, and the surrounding regions in central India. Shere Khan, the majestic antagonist of the novel, is emblematic of the Bengal tiger found in the central Indian landscape. Through the years, the forests in this landscape have gone through different stages—from timber blocks and hunting grounds to wildlife sanctuaries and tiger reserves. In the late 19<sup>th</sup> century, Kanha and the adjoining regions were extensively used

as hunting grounds for elaborate elephant mounted hunting parties involving local hunters, British officers, and members of royal families. Only after a steep decline in the tiger numbers was hunting effectively banned. Conservation efforts over the past few decades have had a significant impact in restoring wildlife in the Kanha-Pench landscape. Presently, Kanha and Pench have become two major tiger reserves of India that are important in view of wildlife and habitat conservation.





# 1 Corridor Significance

## 1.1 Importance of core habitats connected

### **Kanha Tiger Reserve (KTR):**

This tiger reserve is located in the Mandla and Balaghat districts of Madhya Pradesh, India. It has a total area of 2051.8 km<sup>2</sup> with a core area of around 917.44 km<sup>2</sup> and an additional area of 1134.36 km<sup>2</sup> forming a buffer zone. The buffer zone includes Phen Wildlife Sanctuary, a protected area situated in the northern region of Kanha Tiger Reserve. This reserve has one of the highest tiger densities in central India (4.4 tigers per 100 km<sup>2</sup>, NTCA report 2020), and it plays an important role in maintaining connectivity across the Central India landscape (Joshi et al., 2013). It has around 43 species of mammals, 300 species of birds, and 26 species of reptiles. Kanha was declared to be a tiger reserve and included as a part of the Indian government's Project Tiger in the year 1973. It supports a population of 108 tigers with a density of 4.4 tigers/km<sup>2</sup> (NTCA report 2020). The vegetation of the area predominantly comprises sal forests as well as southern tropical moist mixed deciduous forest and southern tropical dry mixed deciduous forest type (Champion and Seth, 1968).

### **Pench Tiger Reserve (PTR):**

Spread across two states, this tiger reserve falls within the Seoni and Chhindwara districts of Madhya Pradesh, and Nagpur

district of Maharashtra. The area of PTR includes the Pench National Park, Mansinghdeo Wildlife Sanctuary, and Pench Mowgli Wildlife Sanctuary. The total area of PTR in Madhya Pradesh is 1179.63 km<sup>2</sup>, which includes a core area of 411.33 km<sup>2</sup> and an additional buffer of 768.302 km<sup>2</sup>. In Maharashtra, the tiger reserve covers an area of 452 km<sup>2</sup> (Jhala et al., 2020). PTR has 58 species of mammals, 325 species of birds, and 33 species of reptiles. The reserve is home to 87 tigers with a density of 5.5 tigers/100 km<sup>2</sup> (Jhala et al., 2020). The vegetation of this landscape is classified into southern tropical dry deciduous forests, southern Indian tropical moist deciduous forests, with teak dominated forests overlapping bamboo patches and ample shrub cover (Champion and Seth, 1968).

## 1.2 Wildlife utilising the corridor

Genetic studies have established that the Kanha-Pench Corridor is a functional corridor that is actively used by dispersing tigers (Joshi et al., 2013; Yumnam et al., 2014; Thatte et al., 2018) and leopards (Dutta et al., 2012; Thatte et al., 2020). Camera trap data has shown that this corridor not only serves as a movement corridor but also has some resident tigers and leopards (Habib et al., 2020; Talegaonkar et al., 2020). Other resident mammals that use this

corridor as habitat include dhole, sloth bear, jungle cat, Indian grey wolf (*Canis lupus*), Indian jackal (*Canis aureus*), Indian fox (*Vulpes bengalensis*), striped hyena (*Hyaena hyaena*), wild pig (*Sus scrofa*), northern plains langur (*Semnopithecus entellus*), gaur (*Bos gaurus*), chousingha (*Tetracerus quadricornis*), barking deer (*Muntiacus muntjak*), nilgai (*Boselaphus tragocamelus*), sambar (*Rusa unicolor*), and chital (*Axis axis*) (Rathore et al., 2012;

Dhamorikar et al., 2017; Srivathsa et al., 2019; Talegaonkar et al., 2020). The elusive rusty-spotted cat (*Prionailurus rubiginosus*), honey badger (*Mellivora capensis*), and Eurasian otters (*Lutra lutra* L.) have also been also reported from the corridor (Talegaonkar et al., 2020). Moreover, over 297 bird species have been documented from this corridor (Chandra et al., 2005). Two critically endangered bird species found here

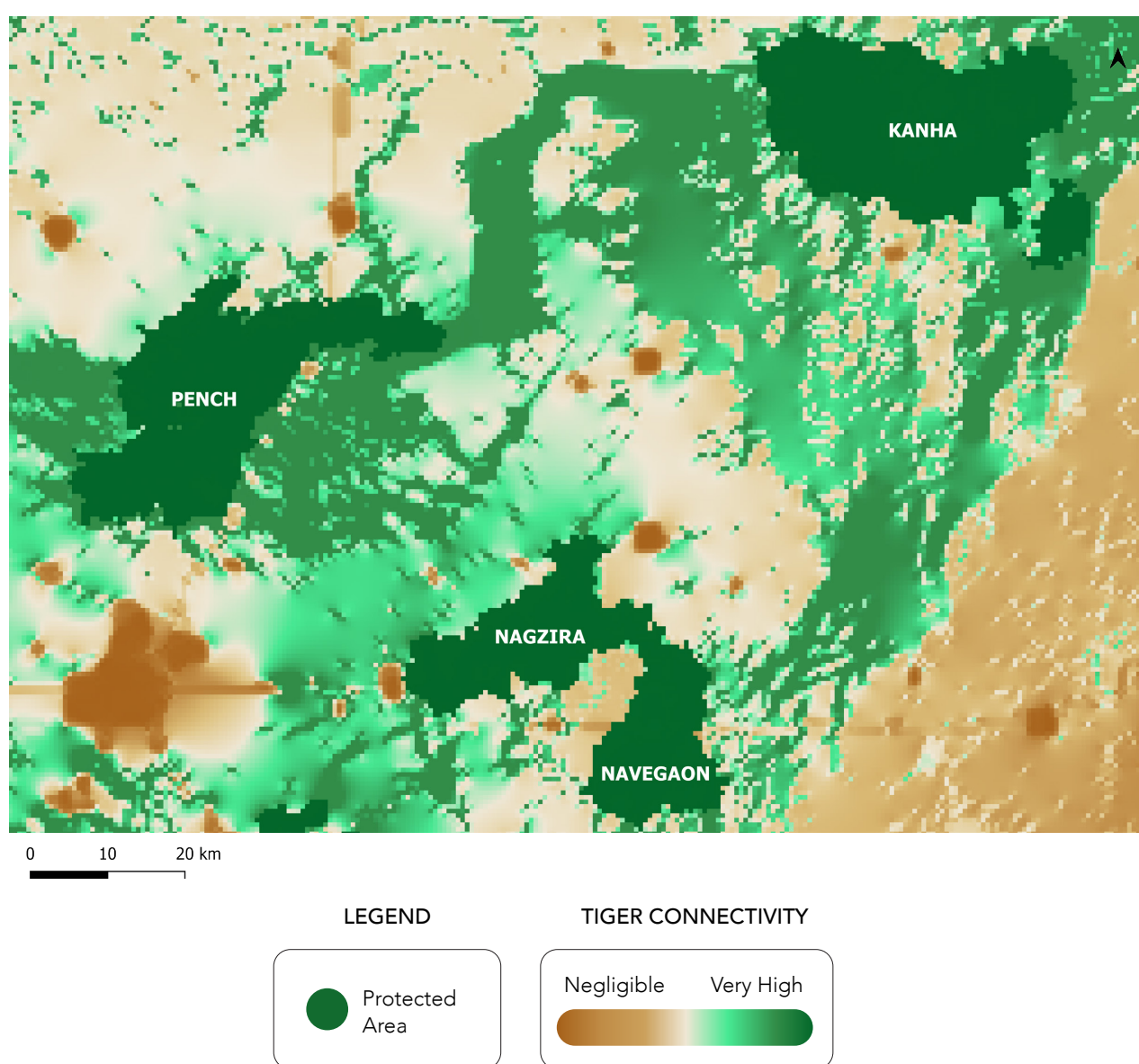


Figure 1: Tiger connectivity in the Kanha-Pench-Nagzira Navegaon region. Connectivity map was generated using a circuit theory based approach and a base map from Thatte et al., (2018). Green regions depict the areas most likely used by dispersing tigers and the brown regions depict areas that impede movement.



include the red-headed vulture (*Sarcogyps calvus*) and white-rumped vulture (*Gyps bengalensis*).

### 1.3 Importance for landscape-scale connectivity

Multiple studies have assessed tiger connectivity in the central India landscape. Schoen et al. (2022) compared the results from five recent studies (Yumnam et al., 2014; Mondal et al., 2016; Reddy et al., 2017; Dutta et al., 2018, Thatte et al., 2020) and reported that all five studies identified Kanha-Pench Corridor as a connectivity area with high potential

movement. Dutta et al. (2015) evaluated the contribution of each corridor in central India towards facilitating animal movement across the landscape and found the Kanha-Pench Corridor to be among the most critical links for maintaining connectivity, which, if broken, can impact connectivity across the landscape. Along with the corridor being a critical link, the Kanha-Pench landscape is an important habitat for tigers and other species. Kanha and Pench tiger reserves, home to a large number of tigers, are the most important viable source populations for immigrating tigers in the surrounding landscape (Dutta et al. 2015).





## 2 Corridor Characteristics

### 2.1 Boundaries

The corridor is spread across the districts of Balaghat (overlapping with Paraswada and parts of Katangi, Waraseoni, Balaghat, Lalbarra, Kirnapur, Baihar and Lanji

tehsils), Seoni (overlapping with parts of Keolari, Seoni, Barghat and Kurai tehsils), and Mandla (overlapping with parts of Bichhiya and Nainpur tehsils). Administratively, the forested parts of the

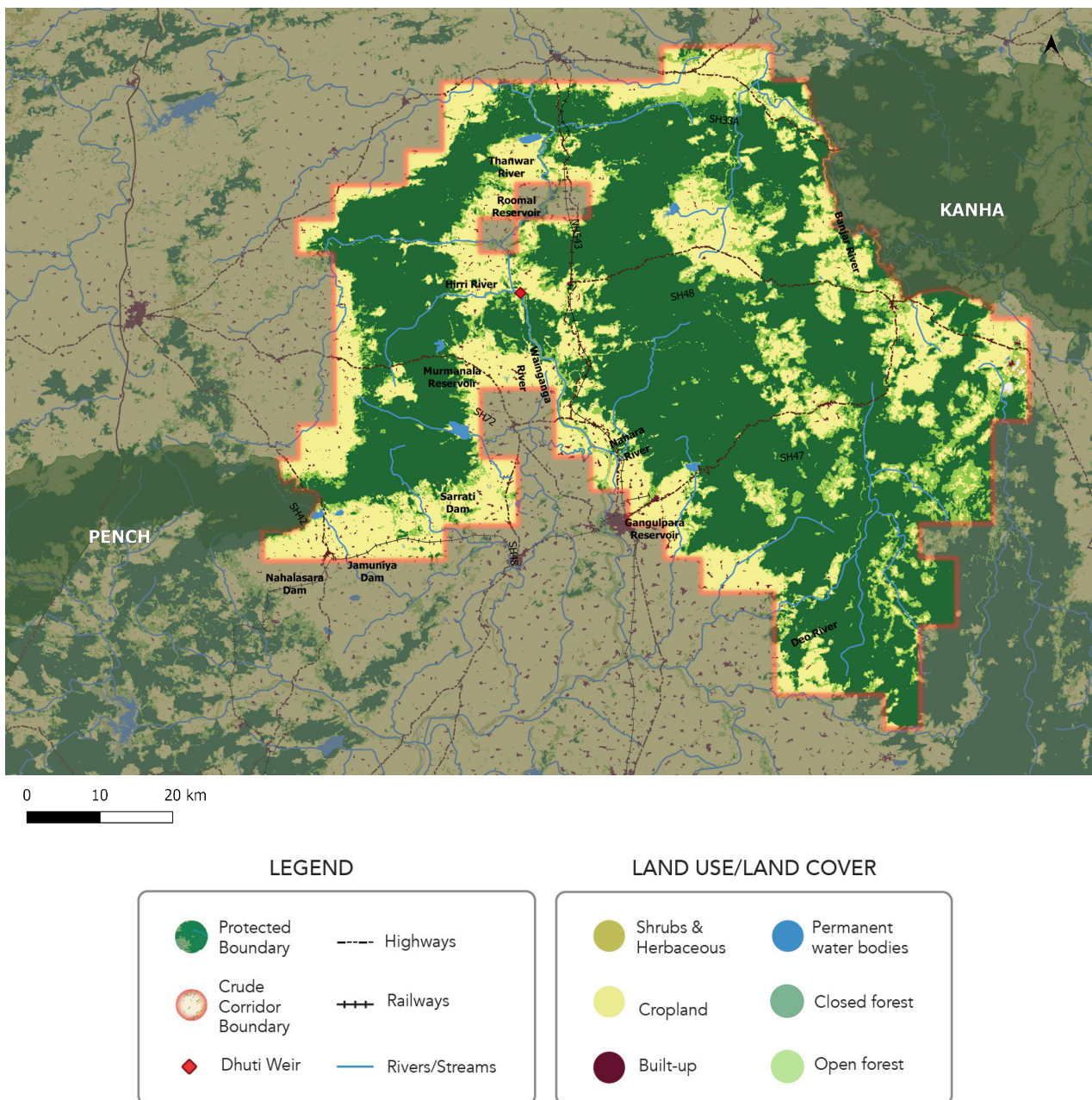


Figure 2: Map showing a crude boundary of the corridor between Kanha and Pench tiger reserves along with the river and road networks



Kanha-Pench Corridor are a part of the South Seoni territorial forest division of the Seoni circle, North and South Balaghat territorial forest divisions of the Balaghat circle, East and West Mandla territorial forest divisions of the Jabalpur circle, and Barghat, Lamta, and Mohgaon project divisions of Madhya Pradesh Rajya Van

Vikas Nigam Limited (Forest Development Corporation). The Madhya Pradesh Forest Department has prepared a detailed plan for the management of areas in and around the corridor boundaries - ([https://mpforest.gov.in/img/files/GIM\\_Revised\\_Plan\\_finaly\\_18\\_07\\_16.pdf](https://mpforest.gov.in/img/files/GIM_Revised_Plan_finaly_18_07_16.pdf)).

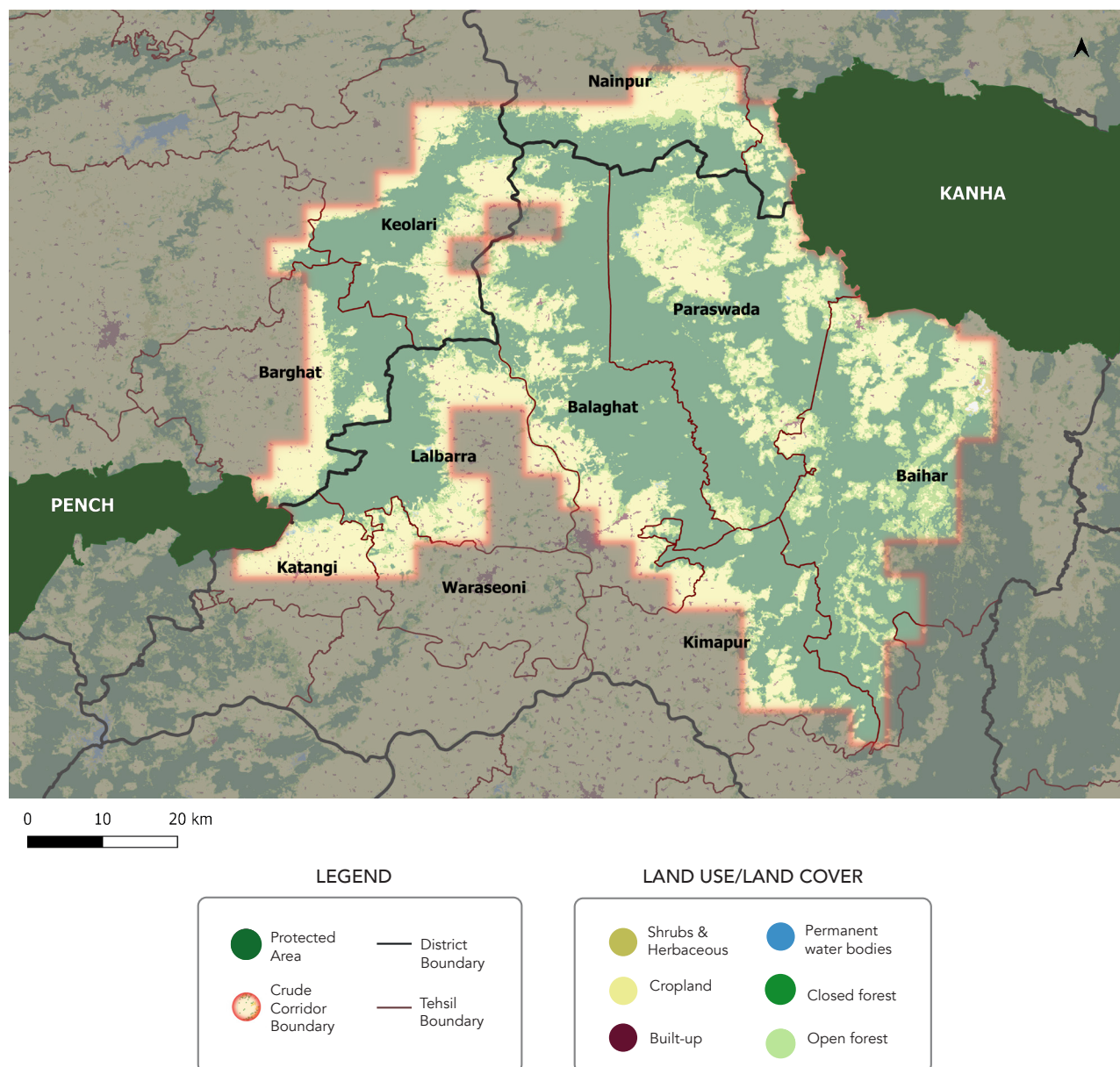


Figure 3: Administrative map representing the districts and tehsils overlapping the Kanha-Pench Corridor. Balaghat district: Paraswada, Katangi, Waraseoni, Balaghat, Lalbarra, Kirnapur, Baihar and Lanji tehsils; Seoni district: Keolari, Seoni, Barghat and Kurai tehsils; and Mandla district: Bichhiya and Nainpur tehsils

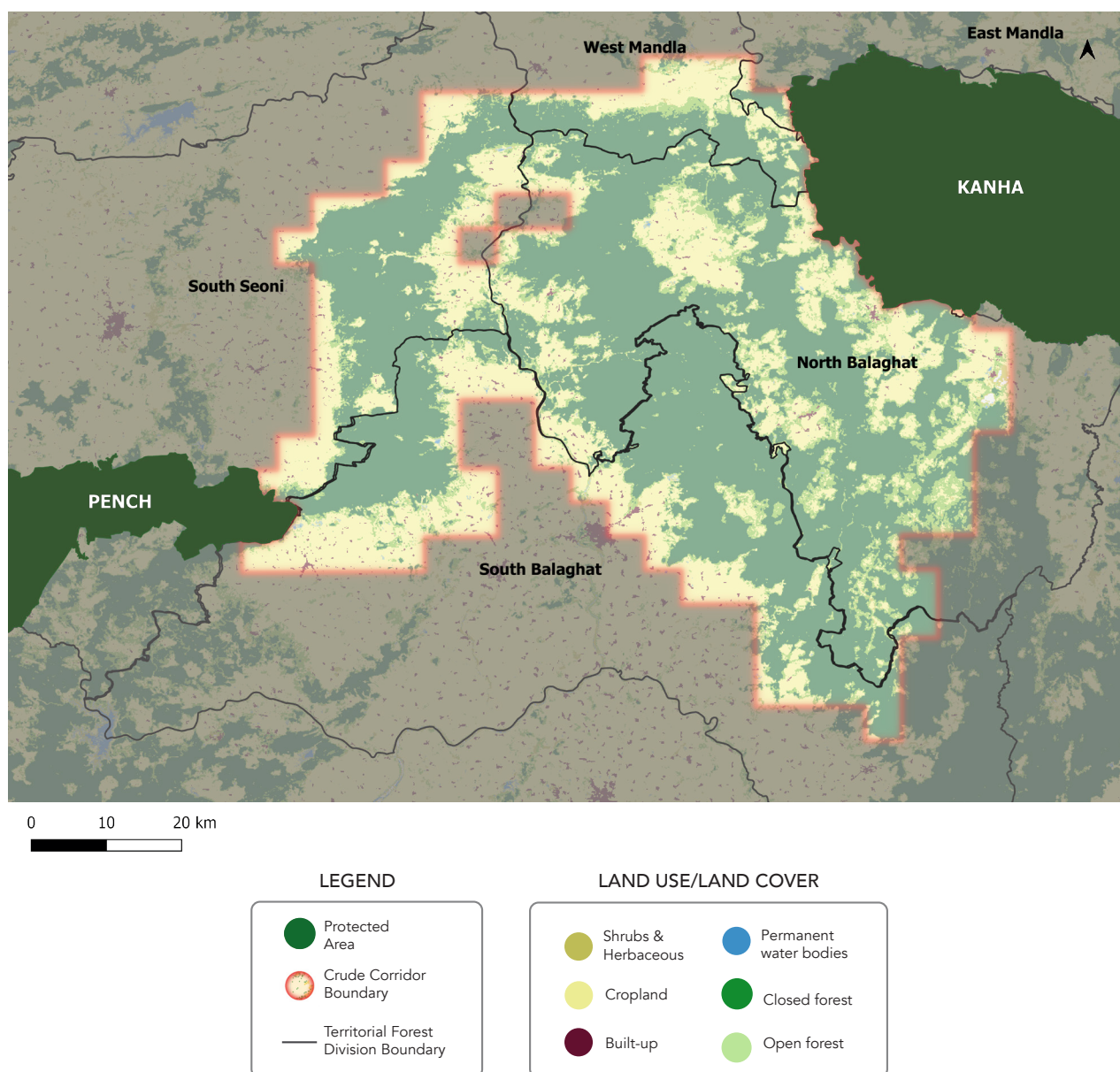


Figure 4: Administrative map representing the territorial forest divisions overlapping the Kanha-Pench Corridor

## 2.2 Physical characteristics

The Kanha-Pench Corridor lies in Madhya Pradesh in the southern portion of the Satpuda range in Maikal hills and covers an area of around ~5,925 km<sup>2</sup> (CWC crude delineation, Figure 2). The Kanha-Pench Corridor Management plan, which considers only the area under the forest and revenue departments, states the

corridor area as 3162.23 km<sup>2</sup>. This region is dominated by moist peninsular Sal forests, southern tropical moist mixed and dry mixed deciduous forests, and tropical dry teak forests. The corridor landscape is characterised by small ridges and hills with steep slopes and is a mosaic of forests, farmlands, villages, and networks of roads and railway lines.



## 2.3 Hydrology

The annual average rainfall within the corridor is 1251 mm (Source: India Meteorological Department). The corridor is drained by the Godavari (80% of the total corridor area) and Narmada river basins (20% of the total corridor area). Both rivers are prone to flooding because of rainfall events and the flow in the rivers is high throughout the monsoon. The Banjar river is a non-perennial tributary of the Narmada river. It originates close to the corridor and flows northward, 53 km along the eastern boundary of the corridor and joins the Narmada river at Mandla. The Wainganga River, a tributary of the Godavari river, originates just outside the corridor on its north-western side and flows southwards through the centre of the corridor. Three significant

tributaries join the Wainganga within the corridor; the free-flowing Thanwar and Nahara join the Wainganga on its left bank and Hirri flows into it from the right. The Dhuti weir, a low dam built in 1923 across the Wainganga near Lamta in Balaghat district, provides water for irrigation in the surrounding areas. Two canals provide irrigation to Balaghat and Lalbarra tehsils on the eastern and western side of the dam, respectively. The other significant water bodies found in the region are the Nahalasara Dam, Jamuniya Dam, Sarrati Dam, Roomal Reservoir, Ahamadpur Reservoir and Murmanala reservoir. Many tributaries of the Wainganga river and Banjar river have their headwaters (origin) within the corridor which makes this terrain critical in terms of hydrology of the river system.



## 2.4 Land use within corridor

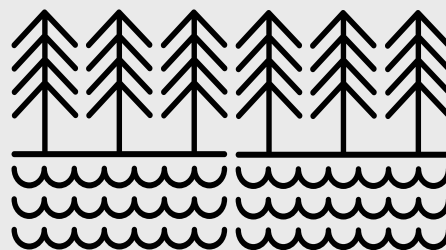
Land use within the corridor was quantified using the 100 m resolution Land Use Land Cover data from Copernicus Global Land Service (Buchhorn et al. 2020). The majority of the corridor is covered by forests. Open forests cover around 13% of the total corridor area and closed forests are spread over 56% of the corridor. Around 29% of the corridor area is utilised for agriculture. Paddy is the main crop sown in this region while wheat, pulses and minor millets are cultivated in some parts of the corridor during the Rabi season. Urban area covers 0.65 % of the corridor.

## 2.5 Critical corridor areas

The critical areas identified within the corridor are represented as boxes in Figure 5.

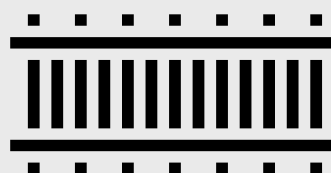
### Box 1:

Dutta et al. (2015) and connectivity modelling based on data from Thatte et al. (2018) identify this area to have high probability of tiger movement, but through a narrow and constricted area. Figure 8 shows that the intensity of conflict in this area is high. Borah et al. (2016) also identify this linkage, called Sarekha Ghat, as a crucial connection between the forests of Sonawani, Rukhad, and Sakata. They highlight that if this connectivity is lost, PTR will become isolated from the rest of the corridor. SH-42 (54) runs close to the eastern boundary of PTR and dissects the corridor in this area.



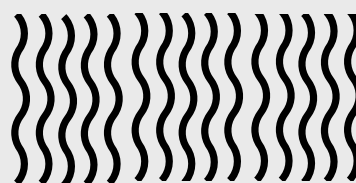
~ 70%

Of the corridor is covered by natural habitat. This includes open forests (~13%, closed forests (~56%), and shrubs and herbaceous vegetation (~0.6%).



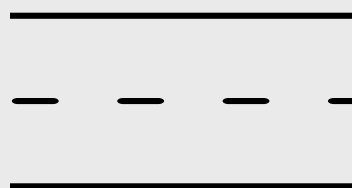
58 km

Of railway line intersects the corridor.



0.3%

Of the corridor area is covered by permanent water bodies, including reservoirs



An extensive network of roadways exists within the corridor and includes national (~77 km) and state (~238 km) highways, and small roads connecting villages.



**Box 2:**

Borrah et al. (2016) identify Latgaon, an area that connects the Sonawani forest to the Kopijhola-Sonkhar forest block, as a critical area within the corridor. They suggest that the villages around this area split the forest into two narrow patches, fragmenting the structural connectivity. Dutta et al. (2015) identify this area to have high probability of tiger movement. The state highway SH-72 (26) passes through this region.

**Box 3:**

NH-543 (SH 11) and a railway line connecting Nainpur and Balaghat passes through the eastern part of this area. Dutta et al. (2018) identify barriers to tiger movement associated with the railway line and fragmented structural connectivity in this area. The forest patch in the centre of this box is surrounded by areas with high human modification index (Fig 6). Although these human modified areas may not be complete barriers to animal movement

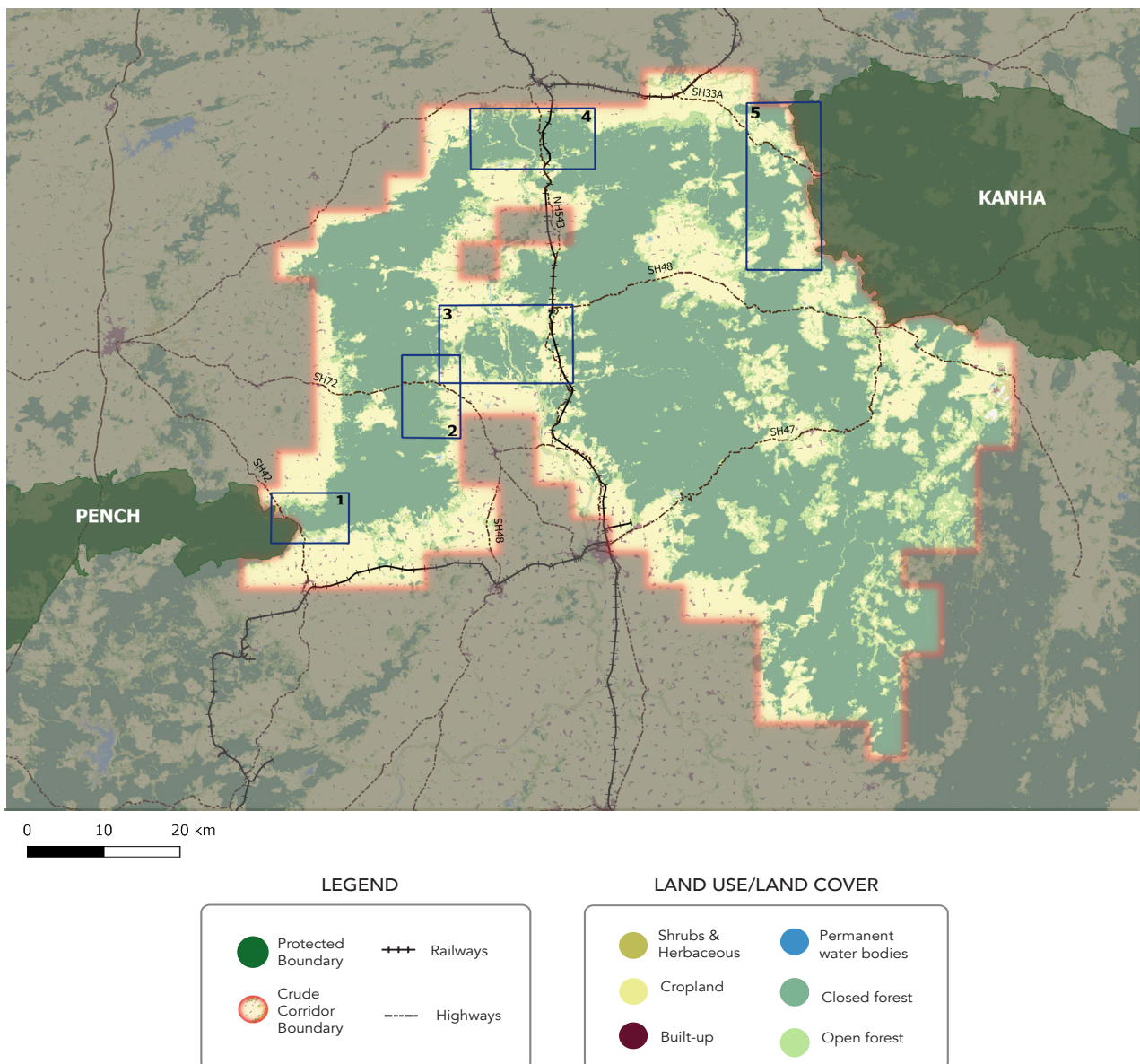


Figure 5: Critical corridor areas in the Kanha-Pench Corridor (Boxes 1–5 represent the critical areas)



currently, further urbanisation can isolate this forest patch impacting connectivity.

**Box 4:**

Borah et al. (2016) identify this area, Nainpur, as an important linkage that connects the forests of Kopijhola-Sonkhar to the Kota forests. Dutta et al. (2018) identify potential barriers to tiger movement associated with railway and roads within this area. The national highway NH-543 (SH 11) running from Nainpur to Balaghat and a recently broadened railway line that connects Jabalpur to Balaghat and Gondia through Nainpur is likely to impact animal movement.

**Box 5:**

Close to Kanha tiger reserve, tiger movement likely gets channelled through several narrow paths as the habitat suitable for tiger movement gets highly fragmented (Dutta et al. 2015 and connectivity modelling based on Thatte et. al. 2018). Borah et al. (2016) highlight that an increase in tourism around the villages of Khatiya and Mocha has resulted in the development of hotels and resorts in this area. Southern part of the box also has a high human footprint (Figure 6). Furthermore, Dutta et al. (2018) identify potential barriers to tiger movement associated with roads within this area. SH-33A (11B) passes through this area.



Rusty-spotted cat  
(*Prionailurus rubiginosus*)



# 3 Stakeholders and Management

## 3.1 Land tenure, holding and legal status

Around 50% of the corridor area is under the management of the forest department. As per the Kanha-Pench

Corridor management plan prepared by the Madhya Pradesh forest department, the total area of the corridor includes 2,552.12 km<sup>2</sup> of forest land. Of this, 2,352.25 km<sup>2</sup> (92%) is legally protected as reserve forests, and 199.87 km<sup>2</sup>

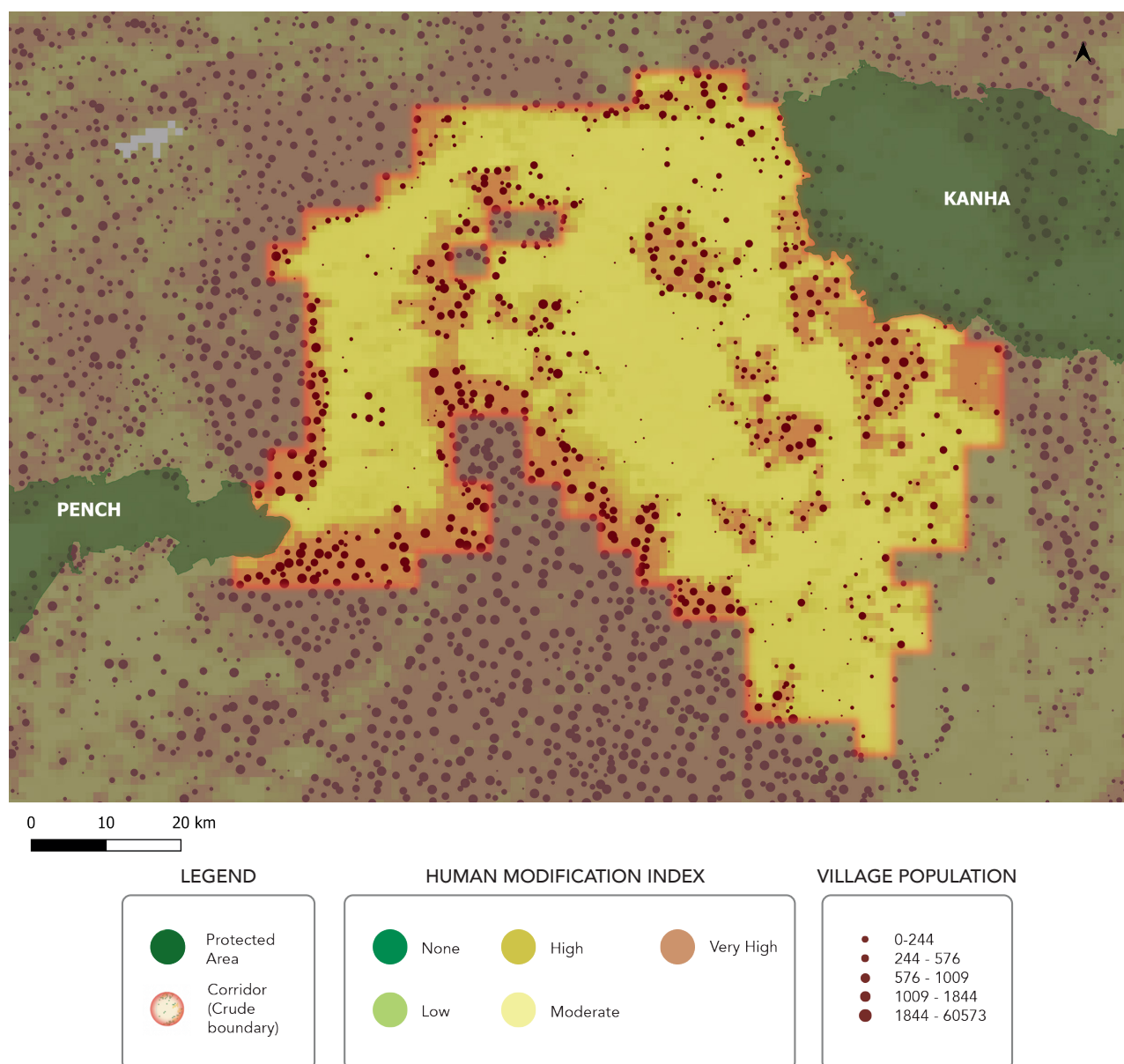


Figure 6: Map showing the extent of human modification across the corridor based on Kennedy et al. (2019) and locations and sizes of villages within the corridor

(8%) as protected forests. The corridor area also includes 610.11 km<sup>2</sup> of revenue land. Administrative control of the state owned forests is divided between the Forest Department and the Revenue Department. Revenue forests have multiple uses which include developmental activities, and thus have lesser protection and less strict rules and regulations.

### 3.2 Settlements and communities

Historically, Kanha, Pench, and the intervening corridor region have been a part of the Gondwana Kingdom - 'Forest of Gonds'. The Gonds and Baigas are the two main tribes of the Kanha-Pench Corridor and surrounding area. Several inhabitants of villages in this area are from these tribes. Pawar, Marar, Lodhi, Aahir, and Yadav communities also reside in the region. There are around 715 villages in the corridor with an average population size of 854 people/ village. Additionally, a proportion of households resettled from within Kanha TR now reside in the corridor. These resettled households comprise of the same ethnicities, have similar if not reduced reliance on the surrounding

forests and continue to face the same human-wildlife conflict as all residents of the corridor (Neelakantan et al. 2019). The corridor has an average human population density of 195 persons/ km<sup>2</sup>, with around 29.8% of the population belonging to tribal communities and 6.2% belonging to the scheduled caste community. Most rural communities in the corridor depend, to varying degrees, on forests for basic household needs and for at least a part of their income. A number of products such as tendu leaves (*Diospyros melanoxylon*), mahua flowers and seeds (*Madhuca indica*), sal seeds (*Shorea robusta*) and bamboo (*Dendrocalamus strictus*) have established markets, making collection of Non-Timber Forest Produce (NTFP) a common practice for income generation. Households supplementing income by converting natural capital to financial capital (like NTFP collection) is empirically evidenced around Kanha TR (Neelakantan et al. 2020). Agriculture is the primary occupation of the communities living in the Kanha-Pench Corridor. Although systematic data is lacking for the complete corridor area, livestock rearing is also practised by the local communities (Barpujari, 2019).





# 4 Challenges

## 4.1 Infrastructure

The average density of linear features in the corridor area (combining national and state highways and railway lines. Data source: Open Street Maps, 2022) is 69 m/km<sup>2</sup>. This ignores the several minor roads crisscrossing through the landscape.

**Roads:** The total length of the National highway (NH-543) passing through the corridor is ~77 km, and length of all the State highways (SH-33A, SH-42, SH-47, SH-48, SH-72) passing through the corridor is ~238 km. A stretch of NH-44 (7) runs through the PTR. In 2019, India's first dedicated and functional underpass for wildlife was constructed underneath a section of NH-44 (7).

**Railway:** The total length of railway lines passing through the corridor is around 58 km. The railway track from Nainpur to Balaghat has a section of its track running through Kanha-Pench Corridor. This railway line cuts the corridor at two crucial linkages – Nainpur section and Pandyachapra section.

**Mining:** Mining is a major industry in Balaghat District in the corridor, and Balaghat has some of the largest deposits of manganese and copper ores in the country. Active mines exist both to the east and west of the corridor. Malanjkhanda copper deposit, located 20 km away from the Kanha Tiger Reserve, is the single largest copper deposit of India.

The Tandsi underground coal mine lies beneath the northern edge of the corridor, while the Nandan and Barkuhi opencast mines are located at a distance of 10.5 km and 15 km respectively from the corridor. Opening up of new mines in the corridor and associated activities including construction of transport infrastructure and production of wastewater and sediments are likely to contribute to habitat degradation (Talegaonkar et al., 2020; Banarjee et al., 2020).

**Built-up:** The number of hotels and resorts near Khatiya and Mocha ranges of Kanha, Baihar town and Rukhad Range of PTR have increased in recent times (Borah et al., 2015). These regions form critical linkages with territorial forest division ranges. Unregulated construction of hotels and resorts in the corridor area will lead to long term impacts like overcrowding, vehicular movement, and night light. Increasing areas of land have been converted for the construction of transport infrastructure. Additionally, the sale of land in the Kanha-Pench Corridor has witnessed an increase post COVID-19 pandemic, and most of these land parcels have been sold by land aggregators to people living in metro and tier-three cities, such as Delhi, Mumbai, and Nagpur (Anish Andheria; Personal Communication). It is likely that several private houses may come along the corridor area adjacent to PTR and KTR in the next five years.

## 4.2 Human-wildlife conflict

Human-wildlife conflict continues to be a realm of active management, compensatory mechanisms, and research in the Kanha-Pench Corridor. Conflict arises mostly due to crop raiding by wild ungulates and cattle kills by carnivores. Free range grazing by livestock makes cattle more vulnerable to predation. It also

poses a threat to tigers through retaliatory actions by the local people, such as carcass poisoning. Sloth bears contribute to a significant number of human casualties and attacks in the Kanha-Pench Corridor. Most sloth bear attacks take place in forest areas near villages during collection of non-timber forest produce (NTFP), fuelwood, and grazing of livestock (Dhamorikar et al., 2017). Humans tend to

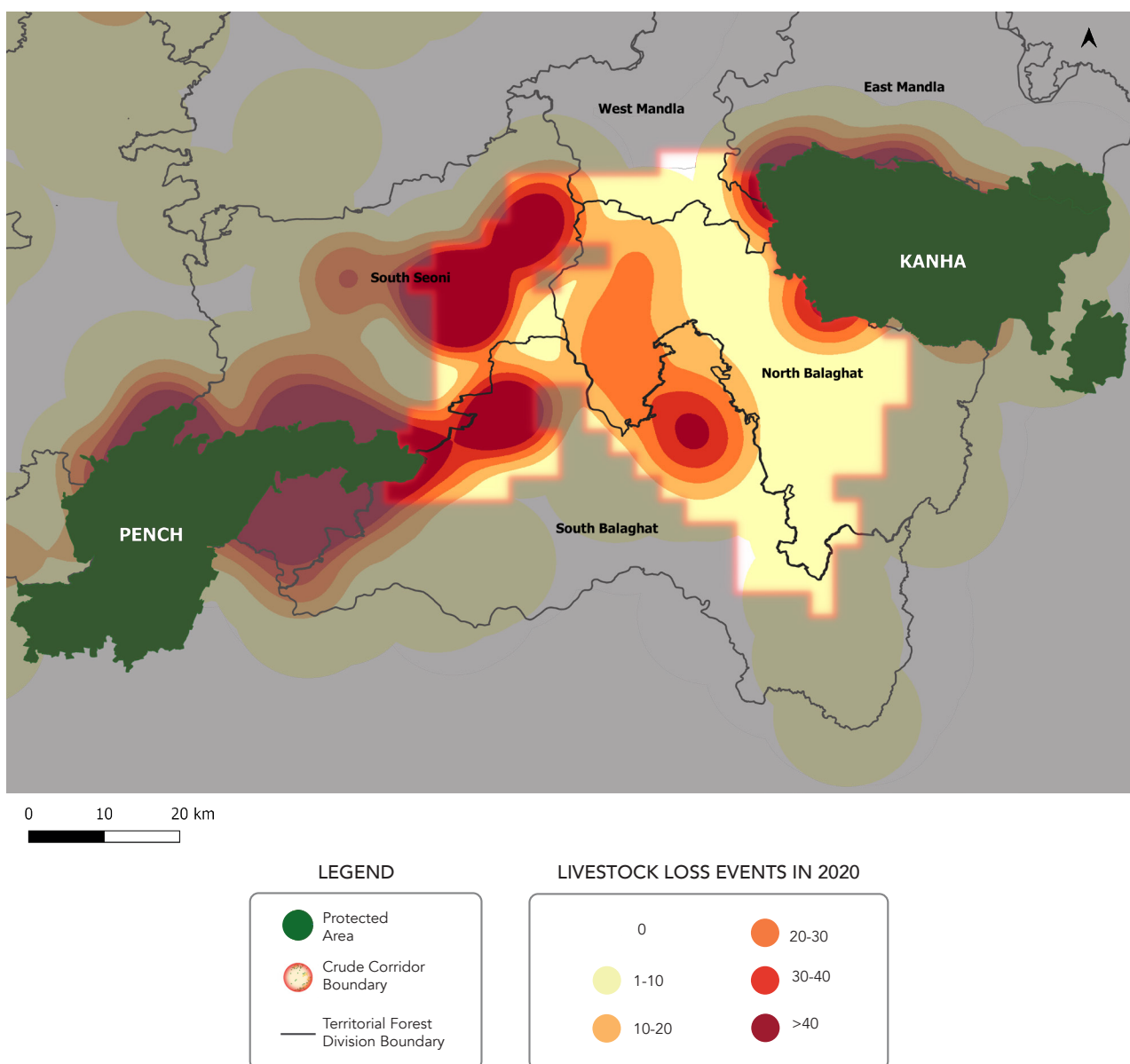


Figure 7 - Map showing livestock loss events due to carnivores in the Kanha-Pench Corridor (Forest Department compensation records, 2020)



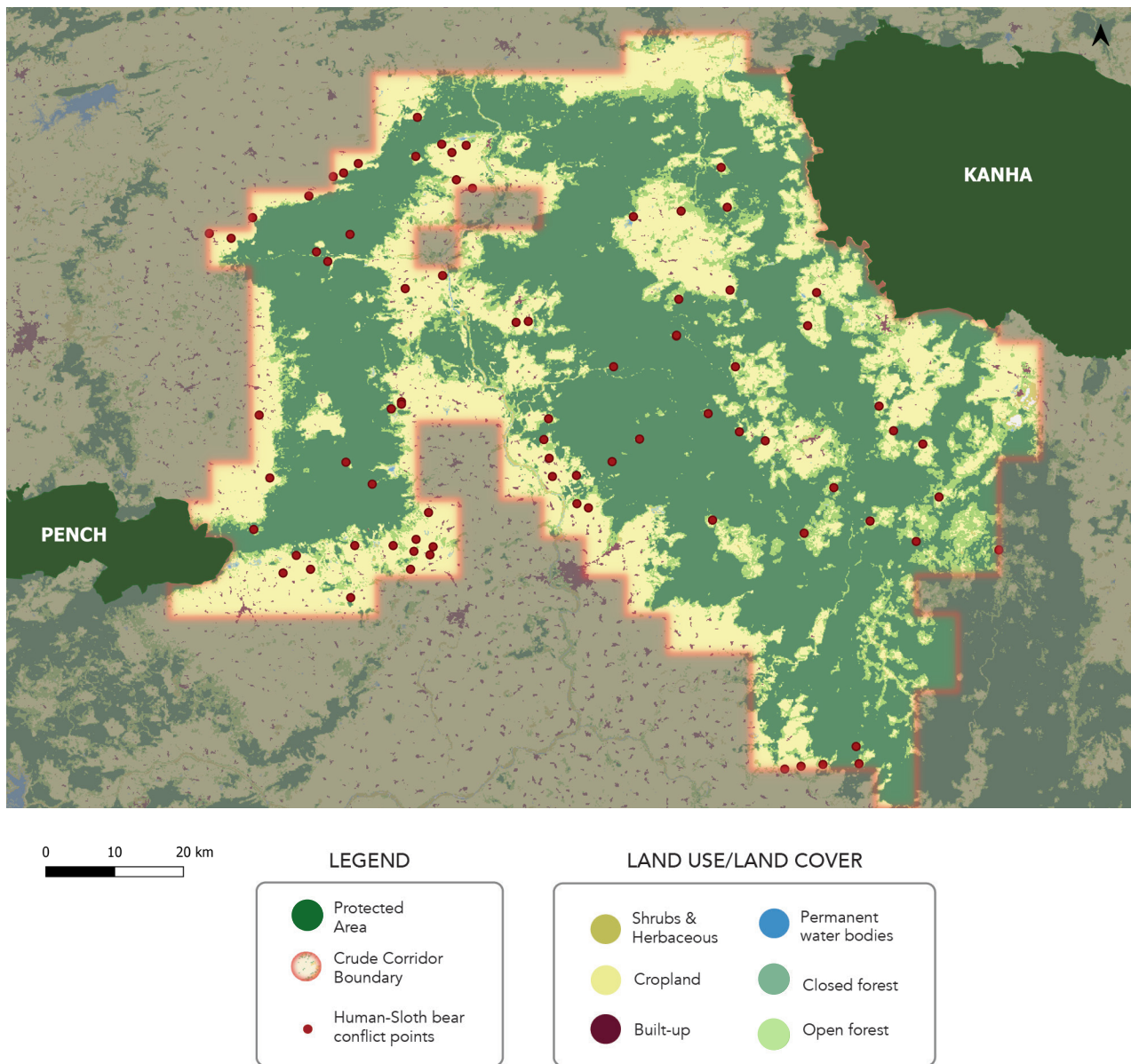


Figure 8 Map of Kanha-Pench Corridor area with locations of villages (marked in red) belonging to sloth bear attack victims (Dhamorikar et al., 2017). The distance of attack was  $\pm 3$  km from the location of the geo-tagged village towards the forested areas. The data included sloth bear attacks in the area between 2004 and 2016.

venture several kilometres into the interior forest areas for the collection of NTFP, and this increases the chances of encounters with sloth bears.

### 4.3 Illegal activities

**Poaching:** While there are no systematic studies to assess the extent and intensity of poaching, informal conversations and photos captured during camera-trap

surveys within the corridor suggest that poaching is a threat to wildlife within the corridor. Species that are hunted in the corridor include wild pig, chital, sambar, jungle cat and porcupine are killed for wild meat. Tiger, leopard, monitor lizard, sloth bear, and sambar are hunted for various animal parts such as hide, bone, teeth, claws, antlers, and hair (Talegaonkar et al., 2020).

**Forest Fires:** Forest fires are common in the dry season and in some ways indicate human impacts on the understory of the forest as fires in central India are mostly human initiated. Often, these fires are unintentional but spread due to negligence; for example, localised burning of forest floor while collecting Mahua (*Mahua longifolia*) flowers and Tendu (*Diospyros melanoxylon*) leaves, major non timber forest products (NTFP) collected in the corridor, can spread to surrounding areas, if not controlled, fuelled by the dry-grass understory

common across the corridor. Fire setting is currently a punishable offence under the Indian Forest Act (Ratnam et al., 2016). However, Ratnam et. al. 2019 argue that dry deciduous forests, the primary forest type within the corridor, are drought-prone, fire- driven mesic savanna- like ecosystems where seasonal water- stress and fire are important drivers of forest composition and structure. Thus while unregulated, human-induced fires remain a challenge, better understanding of the corridor forests and their management needs further research.

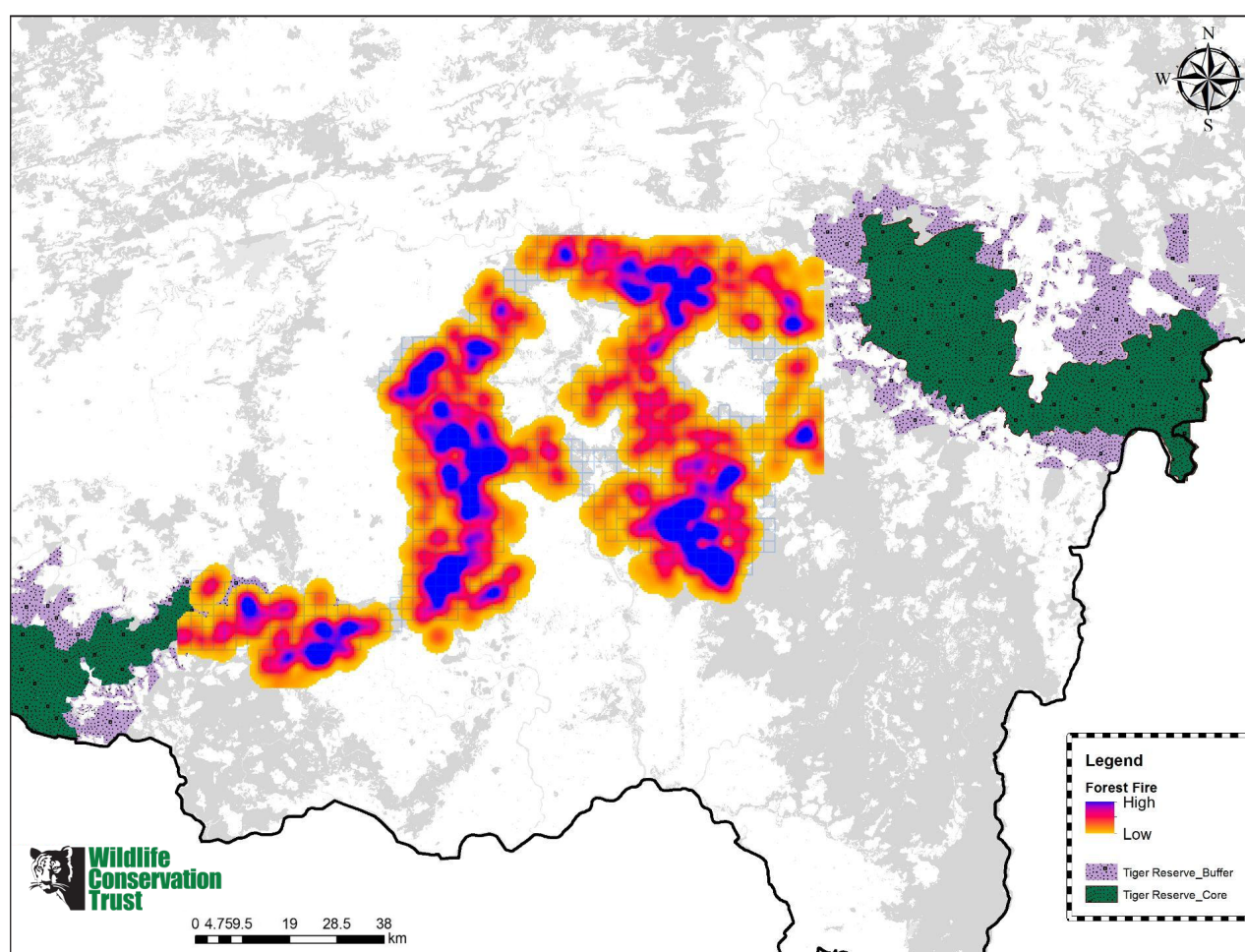


Figure 9: Forest fire intensity in the Kanha-Pench Corridor (based on data from 2016)



## 4.5 Other threats

**Disease transmission:** Feral dogs have a widespread presence in the corridor area, as shown by photographic evidence (Figure 10A). Dogs host several infectious pathogens including Canine distemper virus and Carnivore Parvovirus 1 (CP1) that can exist in multiple hosts and have been reported from wild carnivores in central India including tigers and leopards. Additionally, CP1 was also detected in sloth bear, dhole, and striped hyena, among other carnivores in India. Such multi-host pathogens are an emerging

threat to wildlife and have the potential to cause species decline and population extinction (Shetty, 2019). In the central Indian landscape, there have been several instances of decline and even local extinctions in populations of dholes due to diseases (2016 WCT report). Multi-host surveillance programs are likely to be beneficial for long-term conservation of tigers and other carnivores (Shetty et al. 2019). Such programs would be especially helpful in all corridors, including the Kanha-Pench Corridor, where several carnivores co-occur with a large number of domestic dogs.

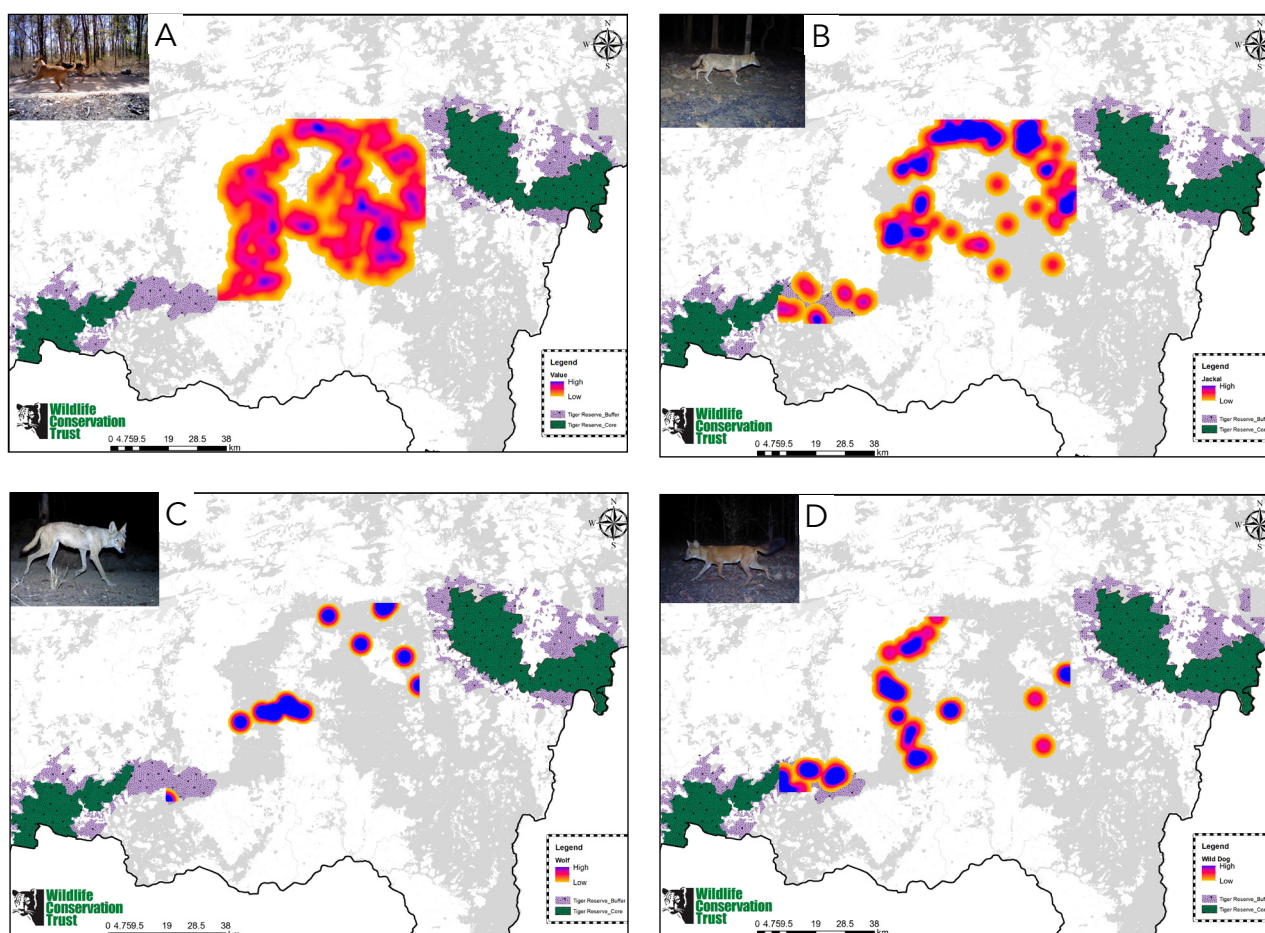


Figure 10: Heatmaps showing animal presence in the Kanha-Pench Corridor: Feral dogs (A) are widely distributed throughout the corridor area. Wild canids, namely jackal (B), wolf (C), and wild dog (D) have patchy distribution restricted to certain corridor areas (WCT survey 2016)

## 5 Recommendations

Recommendations to improve management and conservation efforts within the Kanha-Pench Corridor can be regarded based on the major concerns identified for the corridor.

1. Identified bottlenecks should be monitored and restored, if necessary, to ensure they do not become barriers to movement in the future.
2. Human-wildlife conflict is generally high in the corridor and Karanth et al. (2012) report that on an average, the landscape around Kanha National Park witnesses higher crop raiding risks than livestock predation risk. The species that raid crops include wild pig, chital, grey langur, sloth bear, rhesus macaque, and jackal, among others. While livestock depredation is better reported and studied within the corridor (<https://www.mpforest.gov.in/>; Jena et al. 2014), there is a dearth of information on crop depredation by wild herbivores. Crop depredation escalates the tension between people and wildlife and can promote retaliatory attack on raiding animals and use of live-wire traps. Research focused on understanding the intensity and patterns of crop depredation would be important for effective conflict management in the corridor. Additionally, efficient compensation mechanisms can also help manage conflict in the region.

3. NTCA guidelines for the corridor section of the Tiger Conservation Plans (TCP) mentions formulation of a Corridor Coordination Committee. Since the corridor is between two tiger reserves, both the TCPs will likely mention this corridor and hence coordination between the two is important for effective management. Additionally, the corridor spans several territorial forest divisions- South Seoni, North and South Balaghat, East and West Mandla, along with the Barghat project division, Lamta project division, and Mohgaon project division of Madhya Pradesh Rajya Van Vikas Nigam Limited (Forest Development Corporation). Incorporation of corridor related activities from the TCPs into working plans is important for effective implementation of the corridor sections of the TCPs.



Red-Breasted Flycatcher  
(*Ficedula parva*)



## 6 Conservation Activities

### **Kanha-Pench Corridor Climate adaptation project** (Start Date:

04/01/2017 Duration: 5 years):

This project focuses on building adaptive capacity of communities, livelihoods and ecological security within the corridor.

The project is being implemented in Mandla, Balaghat and Seoni districts by the National Bank for Agricultural and Rural Development and executed by RBS Foundation India through partners on the ground including FES (Foundation for Ecological Security), PRADAN (Professional Assistance for Development Action), WOTR (Watershed Organisation Trust), among others.

### **Interim Relief Scheme (IRS):**

Initiated by World Wide Fund for Nature-India and implemented in partnership with The Corbett Foundation, the scheme provides immediate monetary support to affected local residents in case of loss of livestock due to wild carnivores in the corridor area. This effort is aimed to alleviate immediate negative sentiments of the people toward wildlife, and also to prevent the possibility of retaliatory attacks on wildlife arising through this resentment. Through the IRS, a total of 3,372 cases of livestock killed by wild carnivores in the Kanha-Pench Corridor have been addressed between July 2012 to June 2022.

### **Balaghat TX2 recovery site:**

At the 2010 St. Petersburg Summit, all

13 tiger range countries accepted the Global Tiger Recovery Program, which aimed to double (X2) the number of tigers by 2022. WWF identified eight recovery sites in India, of which the Balaghat TX2 site (area: 963 sq. km)—which falls within the Kanha-Pench Corridor—was the only one located outside the protected areas. WWF-India has been actively involved in the conservation activities in this recovery site and has conducted monitoring studies since 2014 (Talegaonkar et al. 2020).

### **Projects funded by DeFries Bajpai Foundation:**

The DeFries Bajpai Foundation supports scientists and practitioners who work in central India. It has funded the following projects within the Kanha-Pench Corridor area:

1. Examining Carnivore Occurrence and Conflict in the Kanha-Pench Forest Landscape
2. Dynamics of Human–Sloth Bear Conflict in the Kanha-Pench Corridor, Madhya Pradesh, India
3. Connectivity of jungle cat populations in the central Indian Landscape
4. Connecting the link through strengthening the weak-link: conservation status of weak-link villages in the Kanha-Pench corridor

**Wildlife Conservation Trust (WCT):**

WCT is involved in carrying out population estimation surveys and monitoring of animal movement by using camera traps and GIS. More details about their activities are given below:

1. Large carnivore monitoring programme: WCT) has been carrying out systematic camera trapping surveys to monitor wildlife populations and their distributions in the forested areas of the Kanha-Pench Corridor. These surveys aim to track changes in wildlife presence and their habitats in this landscape.
2. Capacity building of the frontline forest staff: This programme focuses on building the capacity of the frontline forest staff in law-enforcement to deal with wildlife crimes. Additionally, capacity building activities frontline forest staff to understand and carry out camera trap-based monitoring of tigers outside PAs
3. Facilitating wildlife connectivity along linear infrastructures: The programme focuses on the upcoming and existing linear infrastructures in the corridor and maps wildlife crossing sites along these projects to identify ecologically meaningful and effective mitigation measures ensuring safe passage for wildlife.





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## 8 Supplementary Information

### **Delineation of the crude corridor boundary:**

The crude corridor boundary was delineated as follows: Circuit theory based modelling approach was used to identify the corridor based on resistance surface generated using genetic data (Thatte et. al. 2018). The cumulative current output values were classified into 10 quantiles and top four quantiles were chosen. Corridors were also identified based on the same resistance surface separately using linkage mapper for comparison. While most of the areas identified by the two approaches overlapped, linkage mapper did not identify some areas that are known to be used by wildlife. Hence, the two outputs were combined and overlaid with the least-cost-corridor identified in (Qureshi et al. 2014). A 5 km x 5 km grid was overlaid on the combined output and grid cells that overlapped with the identified potential corridor areas were selected and dissolved to get the final boundary represented on the map (Figure 2).

### **Estimation of principal indicators:**

Seven principal indicators, namely area of natural habitat, area under forest department, threatened species richness, average human population, human modification index, landscape complexity index, and natural habitat fragmentation index, were calculated to provide the

overall status of the corridor. The method of estimating the value of each indicator is available online at <http://corridorcoalition.org/CWC/about.html>



Racket-tailed drongo  
(*Dicrurus paradiseus*)









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