

Animal Corridors- Need and Challenges

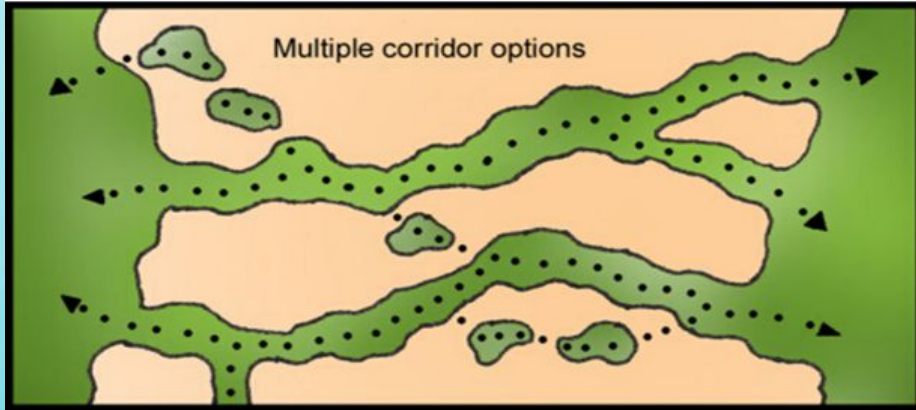
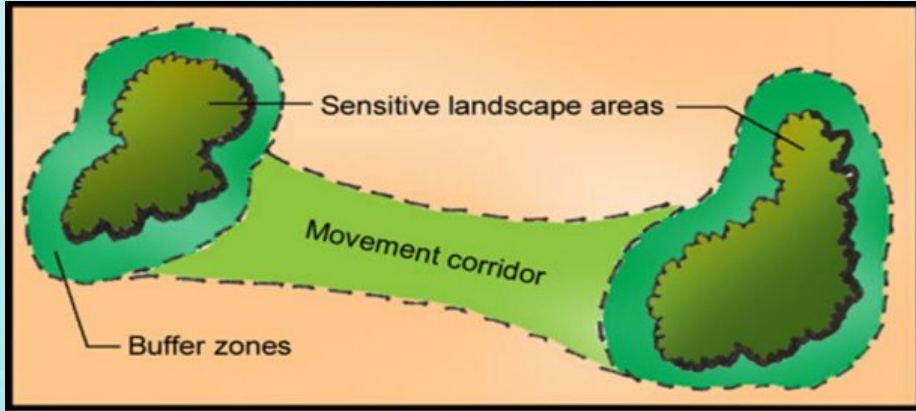


Presented By

1. Avdhesh Meena
2. Krithiga S
3. Manu Bhat
4. Mandar Jeware
5. Kinga Norbu
6. Harvir Singh

Animal Corridors

- An area of habitat connecting wildlife populations separated by human activities or structures (such as roads, development, or logging).
- Aka **Wildlife corridor**, **Habitat corridor**, or **Green corridor**.



Eco-bridge

Users of Animal Corridors

• Passage dwellers

- Occupy corridors for brief periods of time.
- Seasonal migration, dispersal of a juvenile, or moving between parts of a large home range.
- Large herbivores, medium to large carnivores, and migratory species are passage users.

• Corridor dwellers

- Occupy the passage anywhere from several days to several years.
- Plants, reptiles, amphibians, birds, insects, and small mammals

Why Animal Corridors?

PROTECTED BUT NOT SAFE

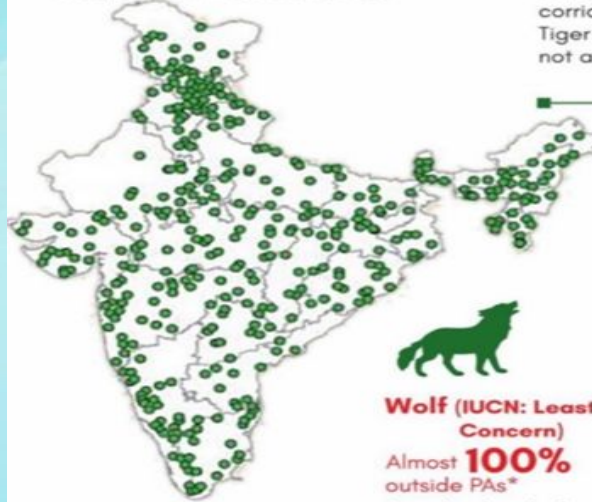
Many Schedule-1 species, which are accorded the highest degree of protection under the law, are found outside notified protected areas

726 protected areas in India (in green) comprising 4.88 per cent of total land area



Tiger (IUCN: Endangered)
29% outside tiger reserves*

Lansdowne Forest Division, a tiger corridor between Corbett and Rajaji Tiger Reserves, has 22-25 tigers but is not a protected area (PA)



Wolf (IUCN: Least Concern)

Almost **100%** outside PAs*

Grasslands, which make up the wolves' habitat, are not notified as PAs



Elephant (IUCN: Vulnerable)
67% outside PAs*

Data from West Bengal and Jharkhand indicates that a herd spent about 235-265 days in a year outside the protected areas between 2005 and 2008



Gangetic dolphin (IUCN: Endangered)

Almost **100%** outside PAs*

Gangetic dolphins are found along the entire stretch of the Ganga, but only the Vikramshila Gangetic Dolphin Sanctuary in Bihar's Bhagalpur district is a notified PA



Blackbuck (IUCN: Least Concern)
50% outside PAs*

58 per cent blackbucks were found outside the Velavadar Blackbuck National Park in Bhavnagar, Gujarat, in 2010

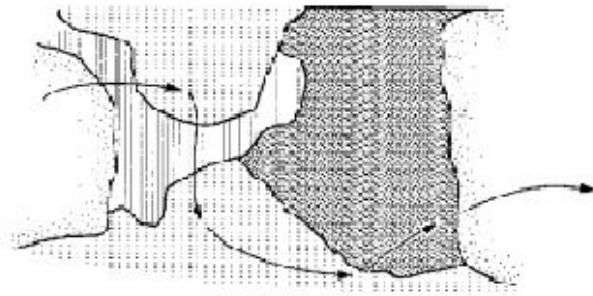
Importance of Animal corridors

- Stabilize population
- Prevents inbreeding (allows an exchange of individuals between populations)
- Move and occupy new areas when food sources or other natural resources are lacking in their core habitat.
- Provides opportunity to avoid predation
- Help facilitate the re-establishment of populations that have been reduced or eliminated due to random events (such as fires or disease).
- Migration — species that relocate seasonally can do so more safely and effectively when it does not interfere with human development barriers.
- Long Term Sustainance- National Tiger Conservation Authority (NTCA) estimates that to be viable on its own, a tiger population needs to carry a 100 adult tigers. There are a handful of tiger populations within PAs in India such as Corbett, Pench etc. the rest of our tiger populations are highly dependant on corridors for their long-term sustenance.

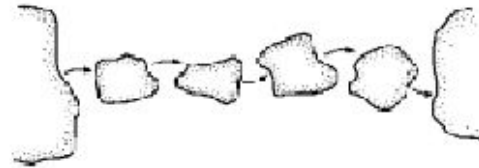
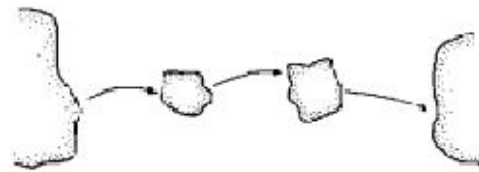
Types

- Regional (>500m), Sub-regional (>300m) & Local (<50m)
- Continuous corridors, Stepping stone corridors
- Underpasses & Overpasses

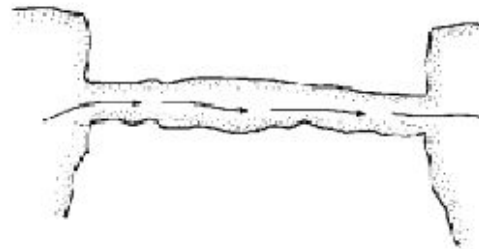
a)



b)



c)



MAJOR WILDLIFE CORRIDORS

1. The Siju-Rewak Corridor (in Garo Hills). Protects an important population of elephants. Links together the Siju Wildlife Sanctuary and the Rewak Reserve Forest in Meghalaya State, close to the India-Bangladesh border.
2. The 16 km long Kanha-Pench elevated corridor on NH 44.
3. Two elephant passes and two minor bridges on NH 54 in Assam's Luming Reserve Forest.
4. Three elephant underpasses, each with 6m of vertical clearance on NH 72 and NH 58 in Uttarakhand.

World's longest and India's first dedicated underpass for wildlife on NH7/44.

- connects Kanha and Pench.
- passing through the Kanha Pench Corridor
- nine 'animal underpasses' were built



Photo: Sourced from internet

Whose
Dream
House?

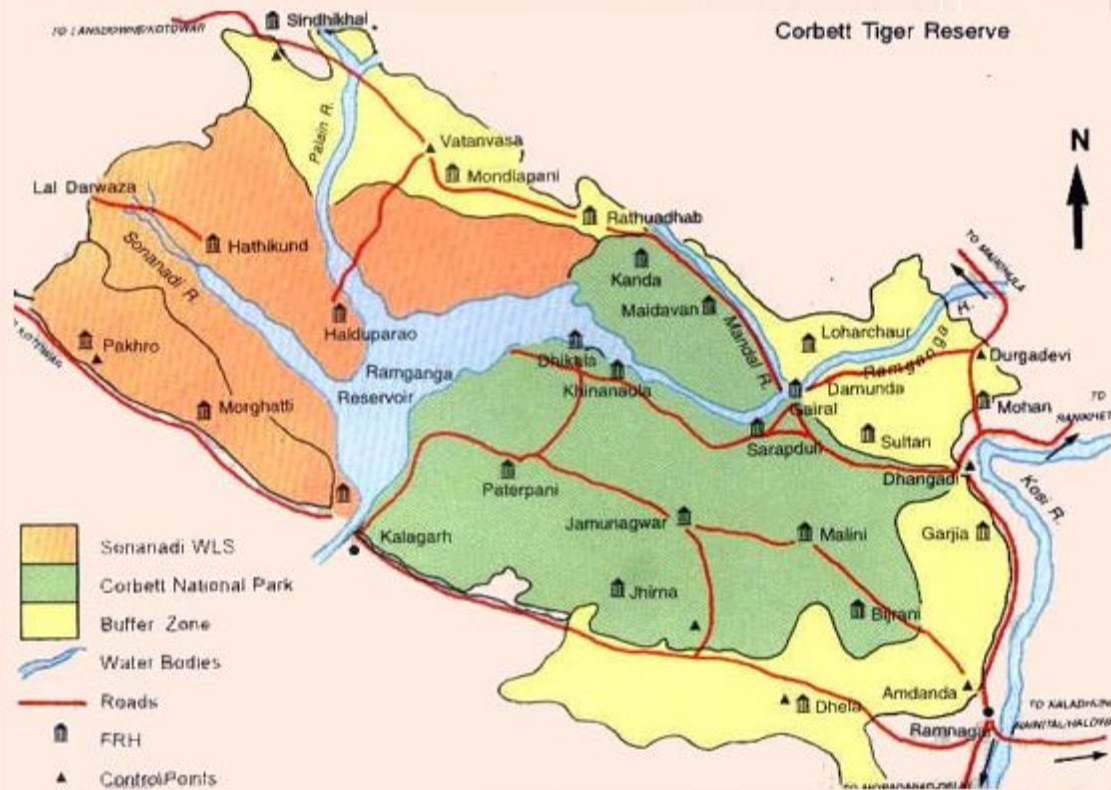


**CAUTION
WILDLIFE
CORRIDOR**

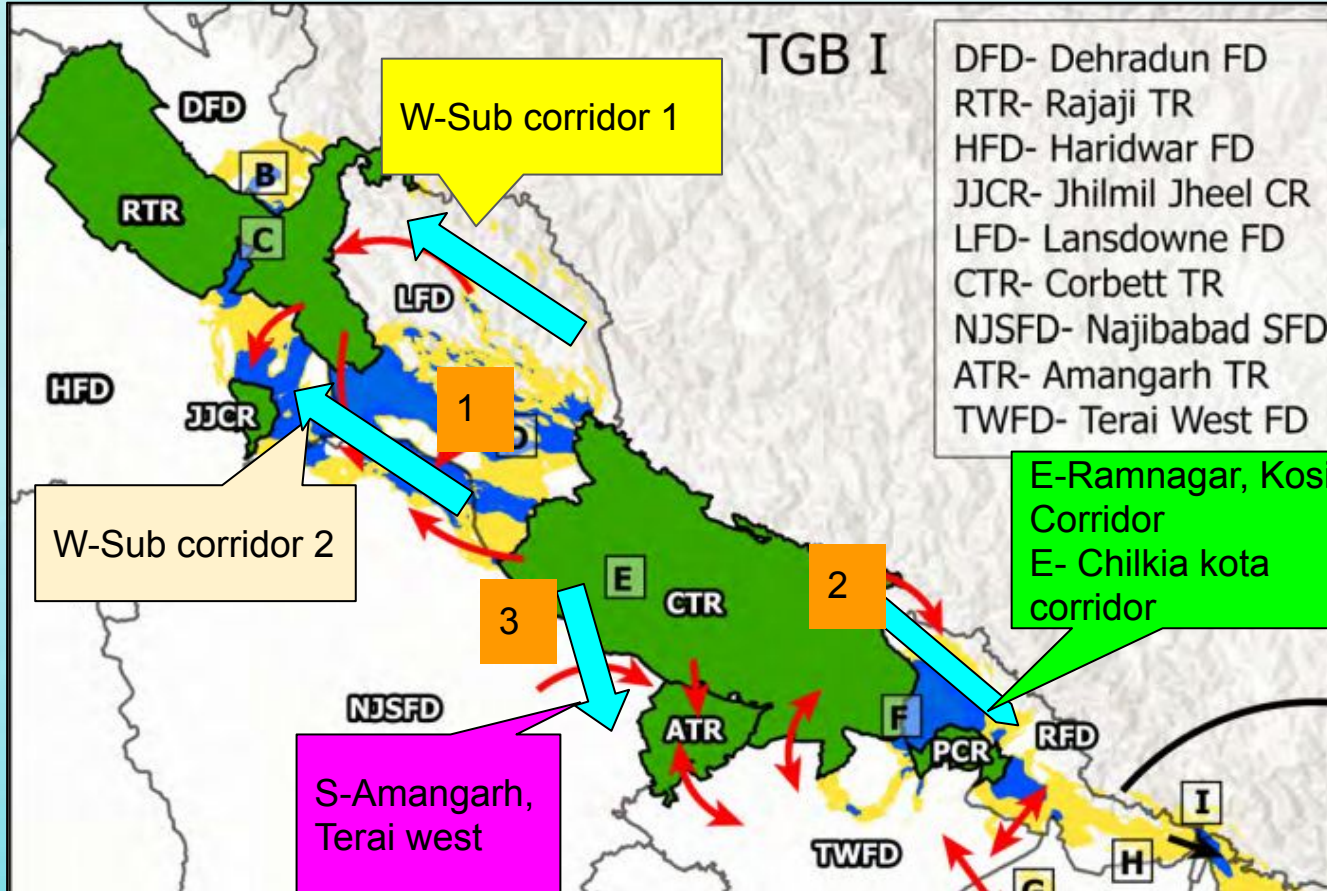


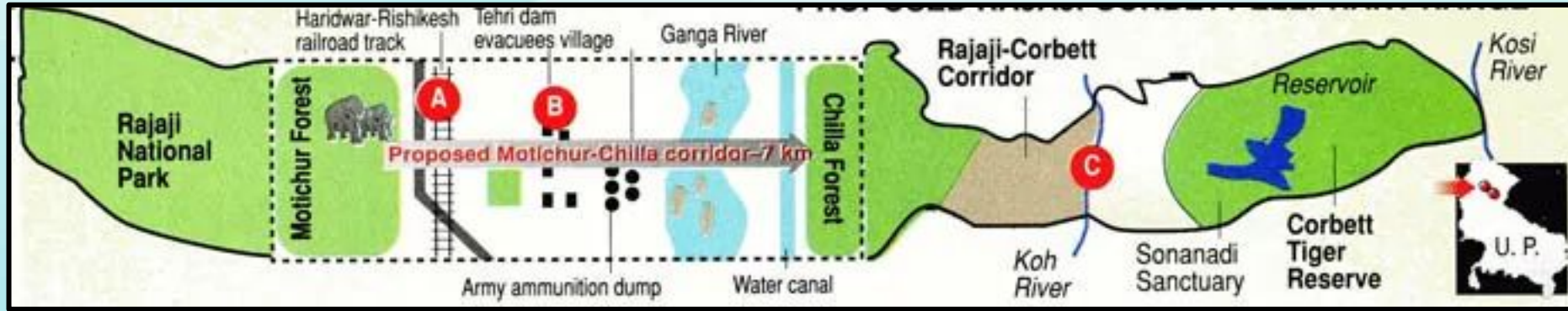
**DRIVE
WITH CARE
NEXT 70 km**

Map of Jim Corbett National Park : Corbett National Park Map



CORRIDORS OF CORBETT





- The C-M corridor(HFD) is frequently used by elephant bulls during the summer, and is crucial to maintaining the genetic exchange between the elephant and tiger populations of the Rajaji-Motichur and Chila.
- However, the C-M corridor is much more vulnerable to human disturbance than the Malin/Kotdwar-Amsod corridors.
- Problems of overgrazing, weed proliferation and lack of tree regeneration in the C-M corridor.
- Very Fragmented
- The development around Kotdwar(LFD) township is impacting this connectivity.



- The Kosi corridor linking the Ramnagar and Terai / Haldwani forest divisions
- The Chilkiya-Kota Corridor (Dhangari-Sunderkhal Corridor)
- Forms the most critical area for connectivity and movement of wildlife between the Corbett Tiger Reserve (CTR) and Ramnagar Forest Division in Corbett Landscape, Uttarakhand, India.
- Impacted by the development around Ramnagar.
- The linear development of tourism infrastructure along the highway from Ramnagar to Almora on the banks of Kosi has impacted the habitat matrix.
- These are vital gene flow linkages.

Distribution Of Van Gujjar Settlements in and around Corbett Tiger Reserve



- Every summer, large movement of wildlife is seen in the ATR region because of availability of water at Pili Dam. Besides, ATR has plenty of water holes.
- Around 200 Elephants
- Gujjars are pastoral communities that depend on livestock for their livelihood; therefore, they have more livestock than other communities. This fact, along with their residing within the corridor, makes their livestock more vulnerable to predation by felids.

**Whose
dream
home?**



LEGAL STATUS OF WILDLIFE CORRIDORS

Not statutorily defined in any major Act such as the Wildlife Protection Act (1972), or Environmental Protection Act (1986)

Only defined by NTCA as “inherent geographical linkages which facilitate movement of tigers and other wild animals from one source area to another”



Patchy Legality?

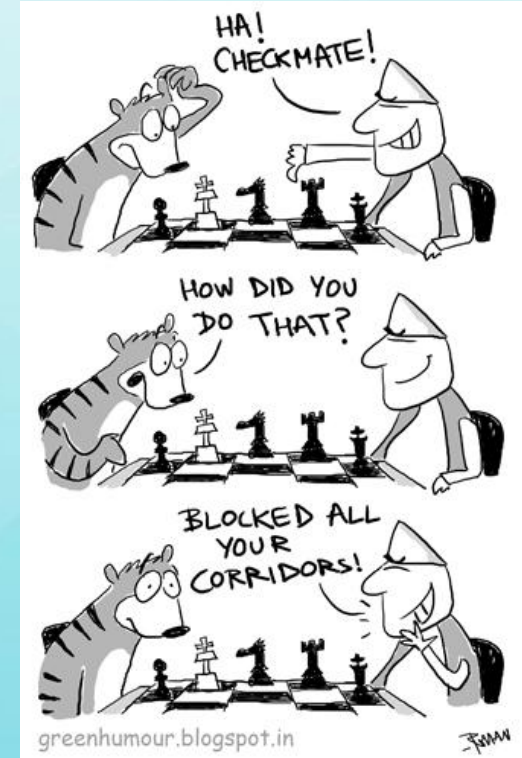
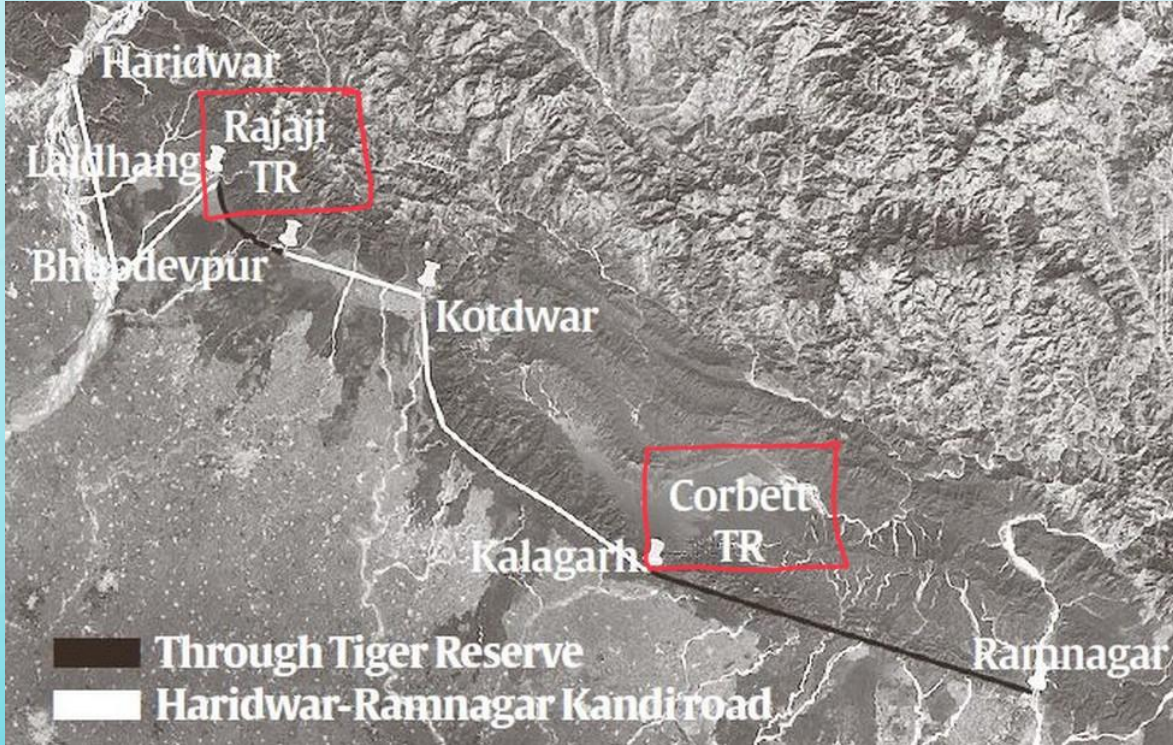
However, most corridors are parts of reserved forests and have found some protection in one way or another in SC judgments, ESZ guidelines, Forest Rights Act etc.

TABLE 1: COMPARATIVE TABLE OF EXISTING LEGAL PROVISIONS FOR CORRIDOR PROTECTION

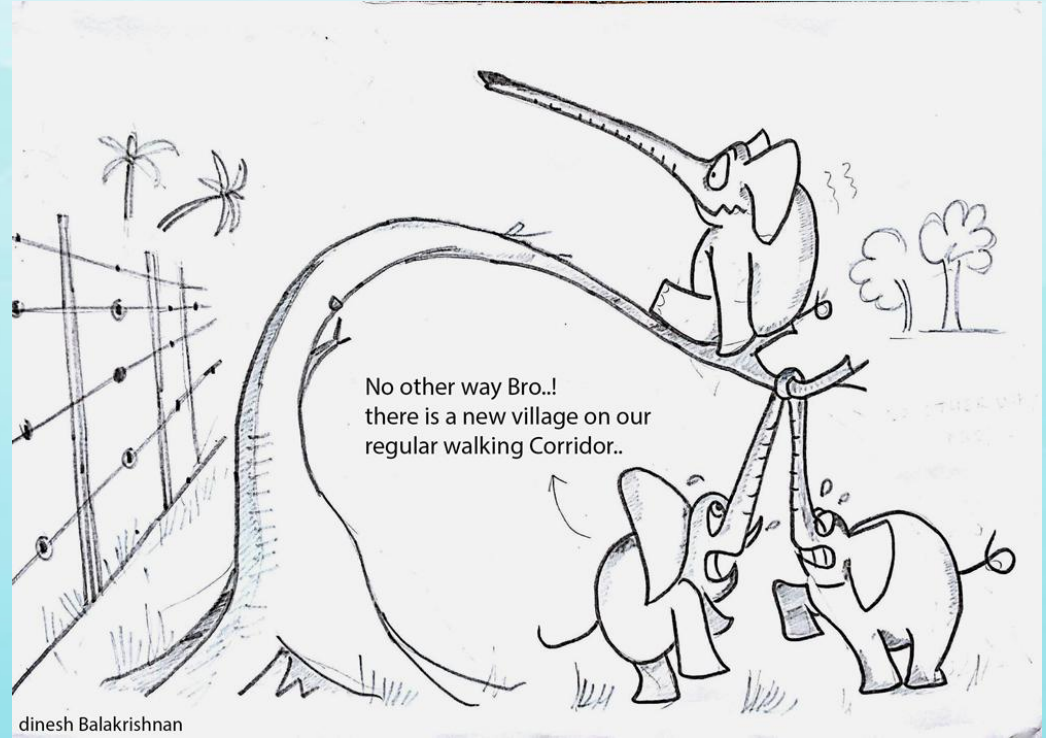
	Eco Sensitive Zone	Community Reserve	Conservation Reserve	Biodiversity Heritage Site	Community Forest Resource
Legal provision	Environment Protection Act, 1986 and allied rules	Section 36C of the Wildlife Protection Act, 1972	Section 36A of the Wildlife Protection Act, 1972	Section 37 of the Biodiversity Act 2002	Section 3(1)(i) of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
Restriction on development activities	Partial restriction on development. <u>Agriculture and small scale development allowed</u>	Restriction on change in land use pattern after notification, except by a resolution passed by the management committee. Certain restrictions similar to those in a sanctuary will be implemented.	Partial restriction on development. <u>Only government land can be converted into a conservation reserve.</u> Certain restrictions similar to those in a sanctuary will be implemented.	<u>No compulsory restriction placed on the area declared as a BHS,</u> but the management committee can regulate development in the area in consultation with the community.	The <u>community has the right to protect, regenerate, conserve or manage</u> any Community Forest Resource. The Gram Sabha has the legal right to regulate activities within the area to restrict certain activities.

Impact of Legal Confusions

CTR West End

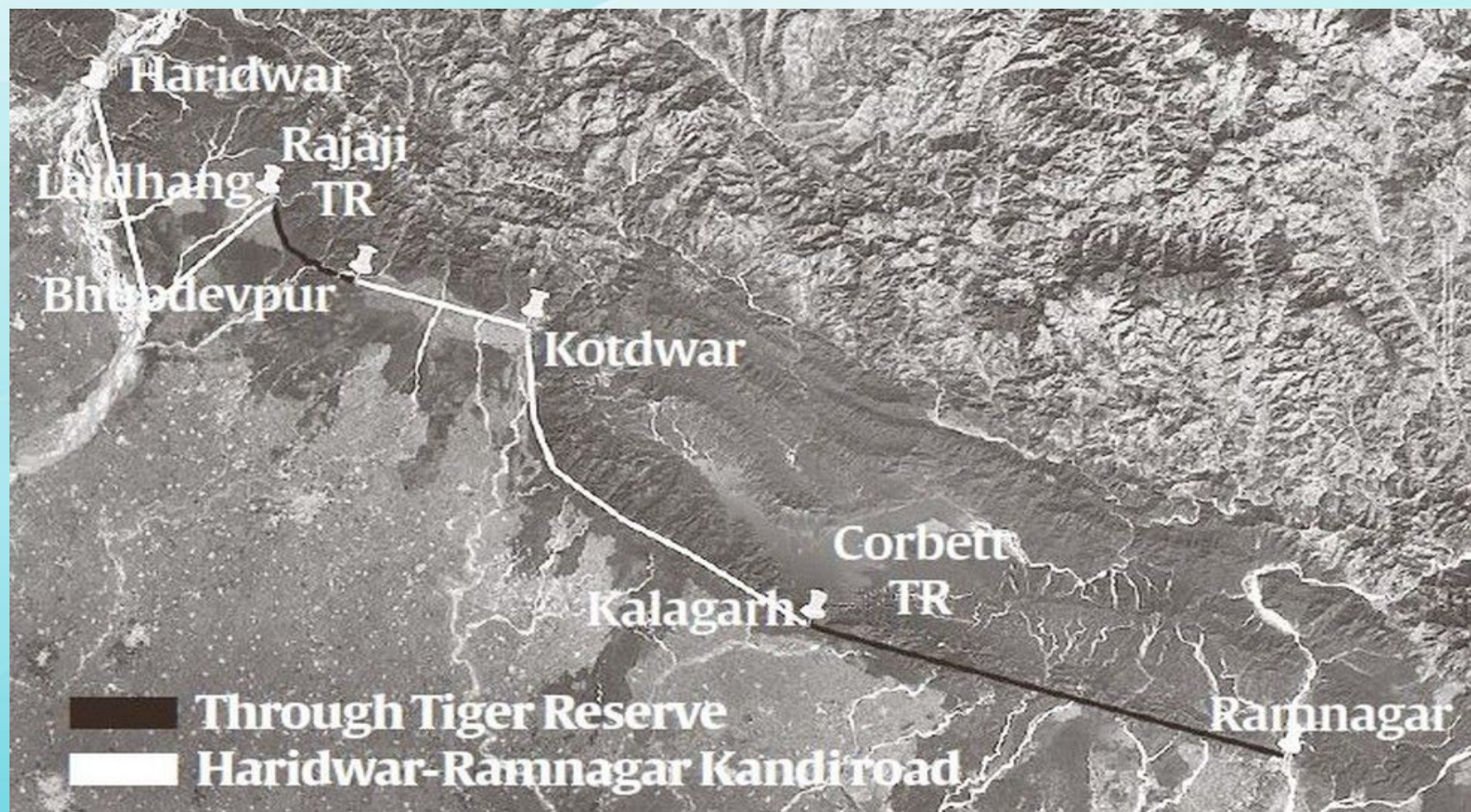


CTR East End



Challenges in conservation through wildlife corridors

1. Infrastructure Development-E.g Laldhang-Chillarkhal Road
 - Chamaria Bend to Siggadi Sot (4.5 km) out of 11.5 km road
2. People and Livestock
3. Inter-state coordination
4. Unregulated Tourism
5. Lack of clarity on legal status and activities to be permitted subsequently



Haridwar

Laidhang
Rajaji TR

Bheodevpur

Kotdwar

Kalagarh TR

Corbett TR

Ramnagar

Through Tiger Reserve

Haridwar-Ramnagar Kandi road

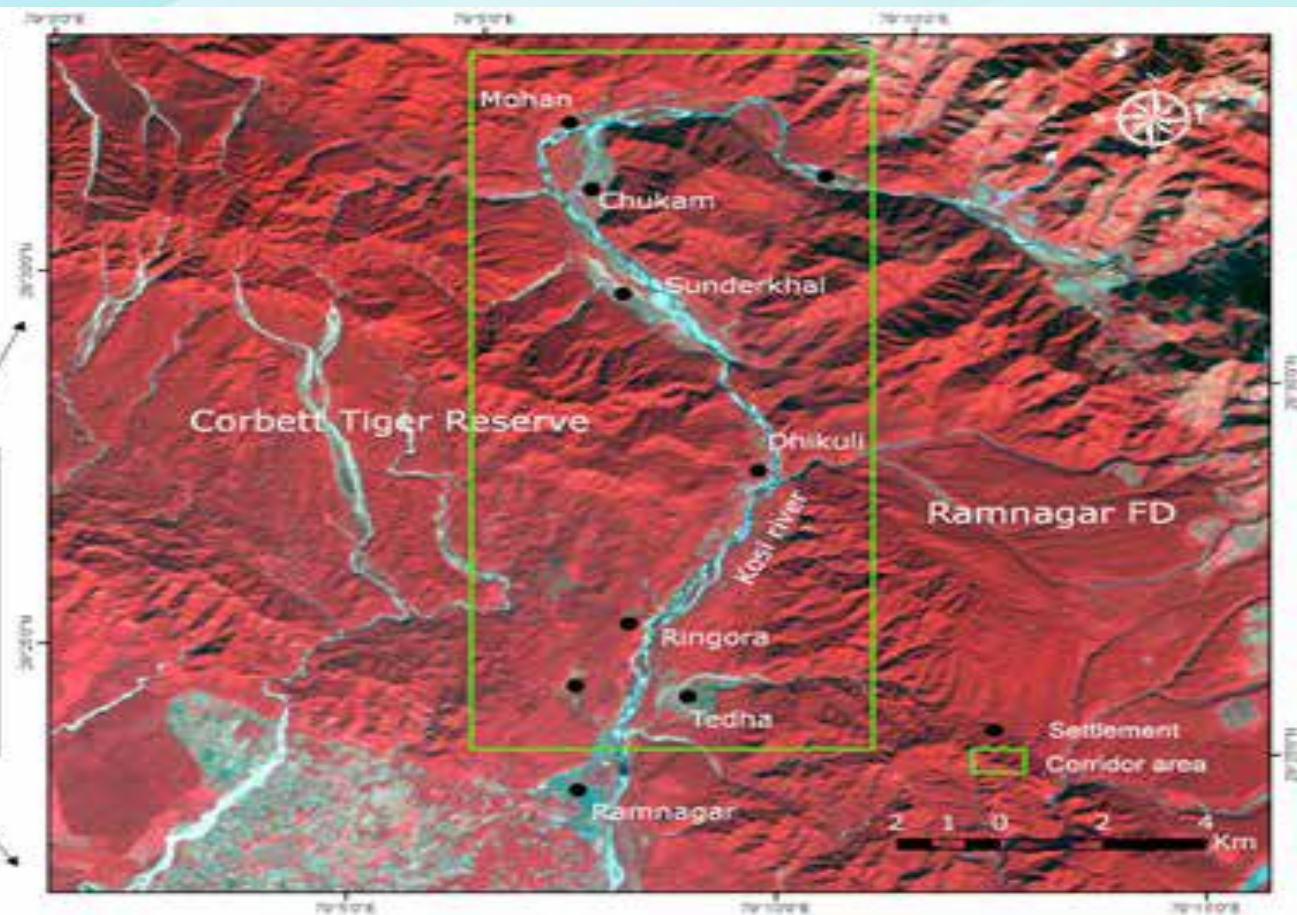
Case Study of Kosi River Corridor

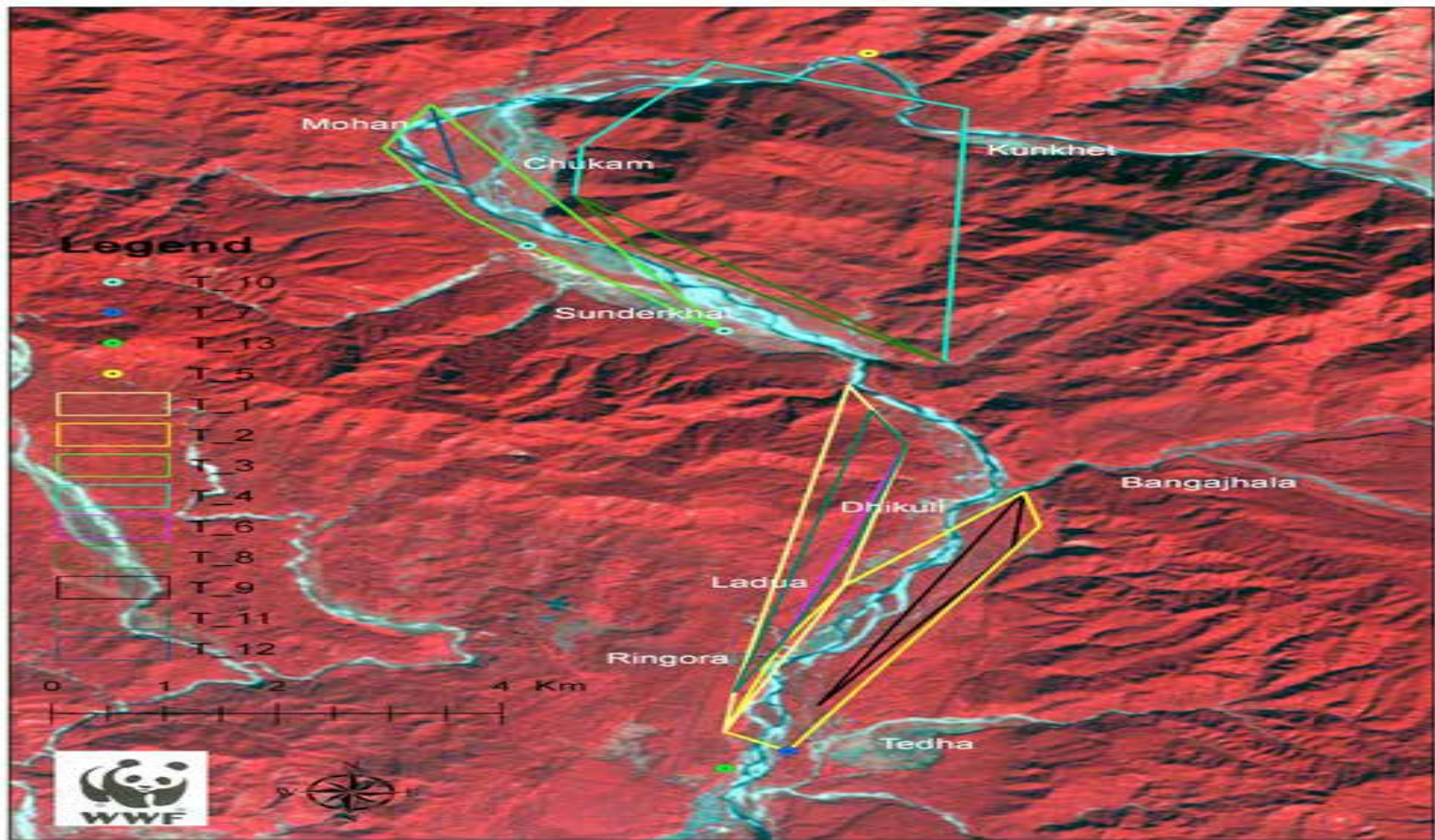
- Camera trap captures provided a rare insight into the movement of tigers in the Kosi River corridor.
- Thirteen tigers were captured by camera traps in the corridor area
- The forest in this corridor reported a rich array of mammals - 21 species including tiger, leopard, elephant, black bear and red fox.
- Red fox was recorded for the first time from this corridor.



WWF

WWF-India





1. Infrastructure Development

- Drastic changes came about in land use pattern in villages such as Dhikuli and Mohan in last two decades- resorts and tourism facilities
- Most of the disruptions in the corridor were found along the middle portion
- Bright lights put up in those resorts were spotted in many photographs
- IMPCL Factory
- Sand and Boulder mining



2. People and Livestock

- Bhotia pastoralists
- Relative abundance indices were also high for cattle and other domestic animals
- Intensive human interference in the corridor were also found to give rise to human – animal conflict along the corridor.
- Small island forest patches along the Kosi River- intensively exploited by fuelwood collectors



Status of Tiger Conservation in Bhutan

- ❖ Eastern Himalayas
- ❖ Area 38,394 km²
- ❖ Population of 763,000
- ❖ 69% rural community, dependent on subsistence farming and livestock rearing



Country Background

Greater Himalayas

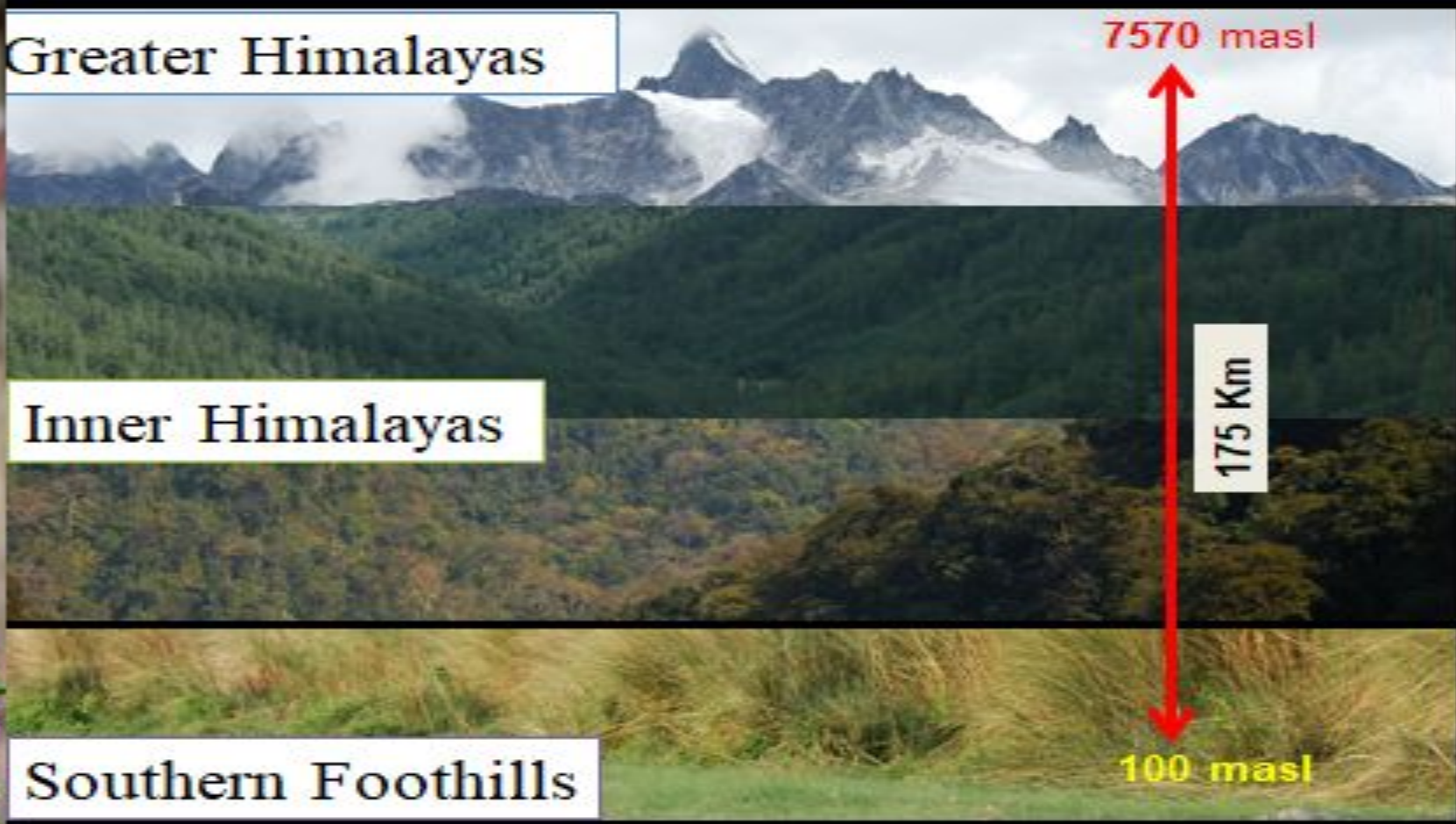
7570 masl

Inner Himalayas

175 Km

Southern Foothills

100 masl



Socio-Cultural Significance



Socio-Cultural Significance



Bhutan Conservation Landscape

Top 20 priority Tiger Conservation Landscapes

51.44% of country is devoted to conservation (PABC)



PCRSO PROFESSIONAL



Bhutan Conservation Landscape

Connects TCL of Terai
Arc grassland of India

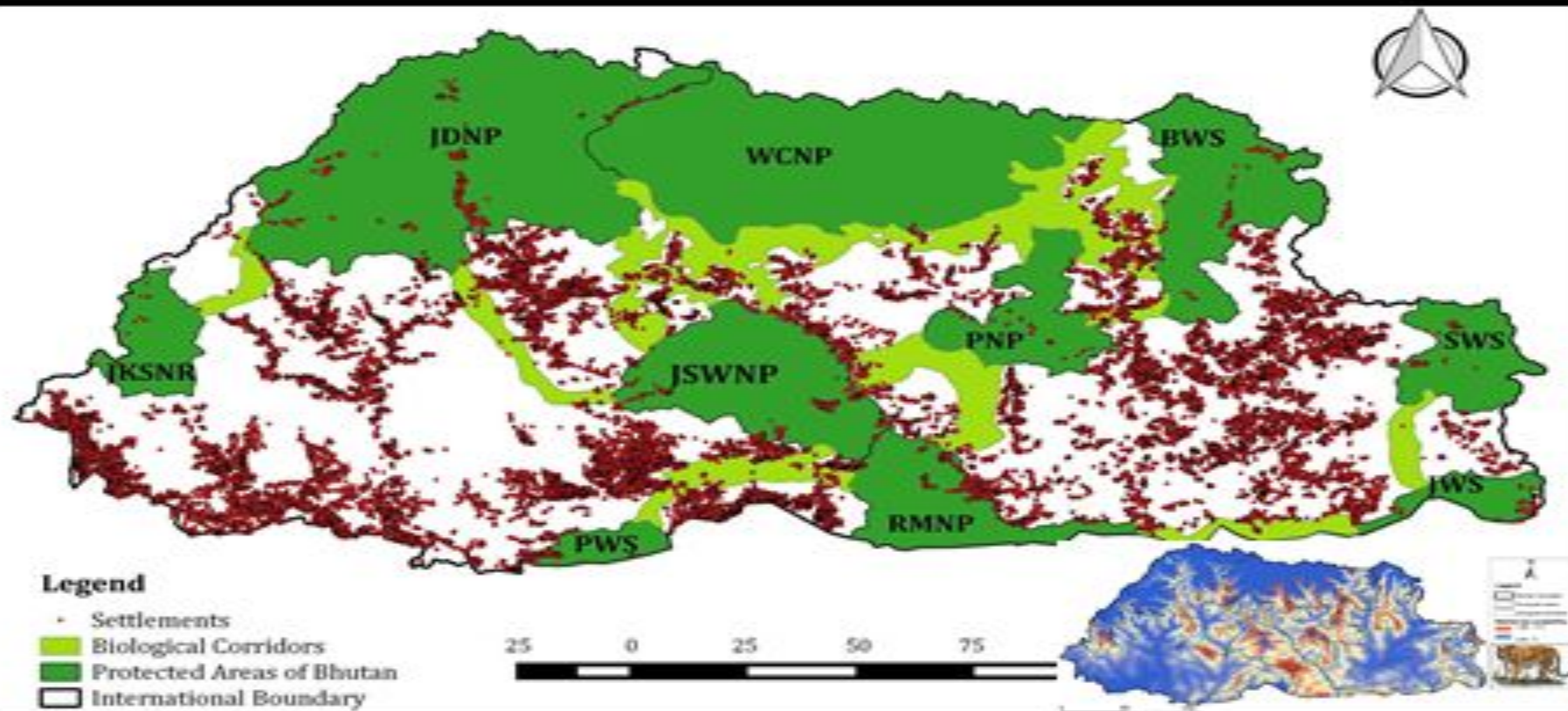


Eastern Himalaya Ecoregion Complex



Bhutan Conservation Landscape

Human and Protected Areas



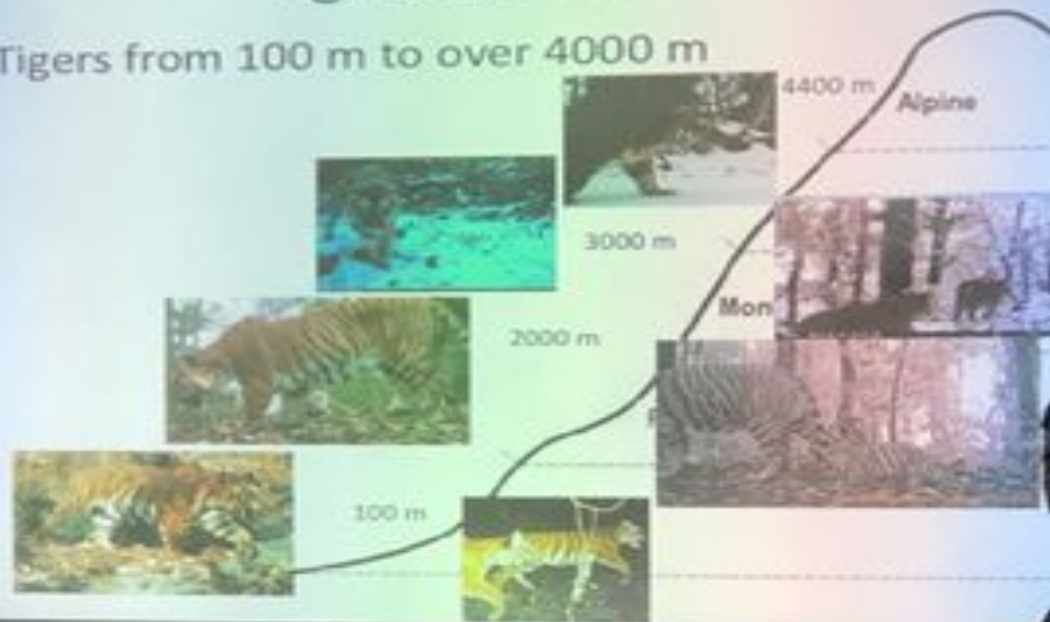
Bhutan's Conservation Landscape

103 Tigers (2015)
Tigers roam freely from 100 m
to 4500 masl



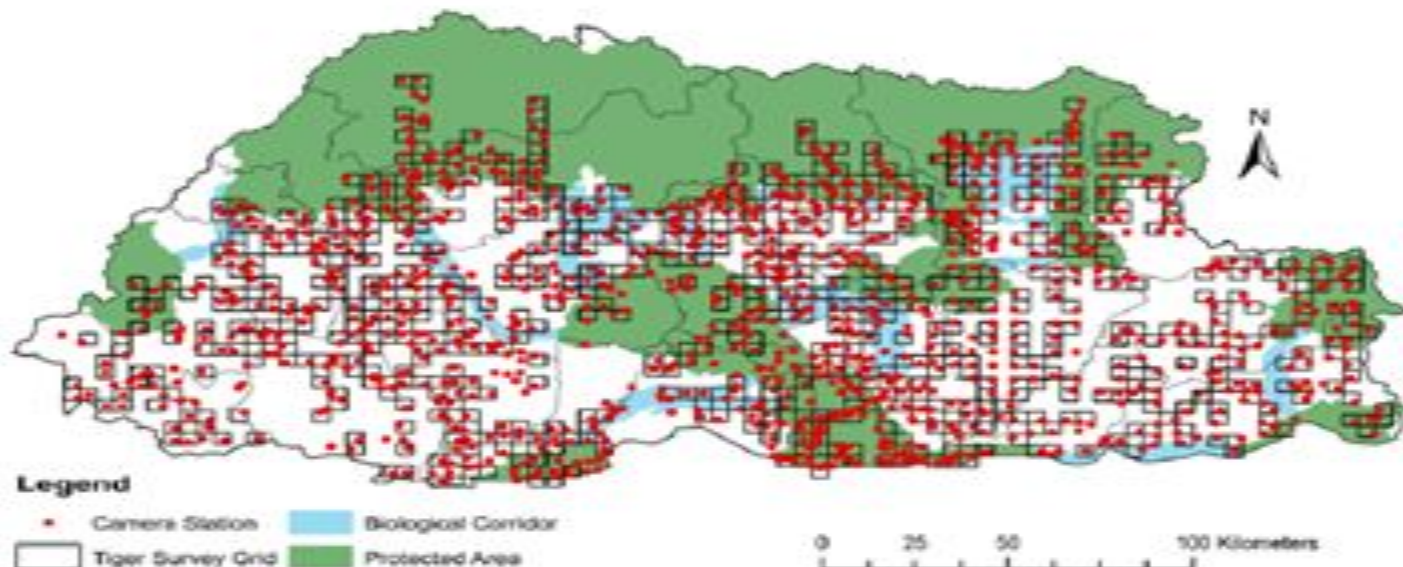
Tigers and Bhutan

- Tigers from 100 m to over 4000 m

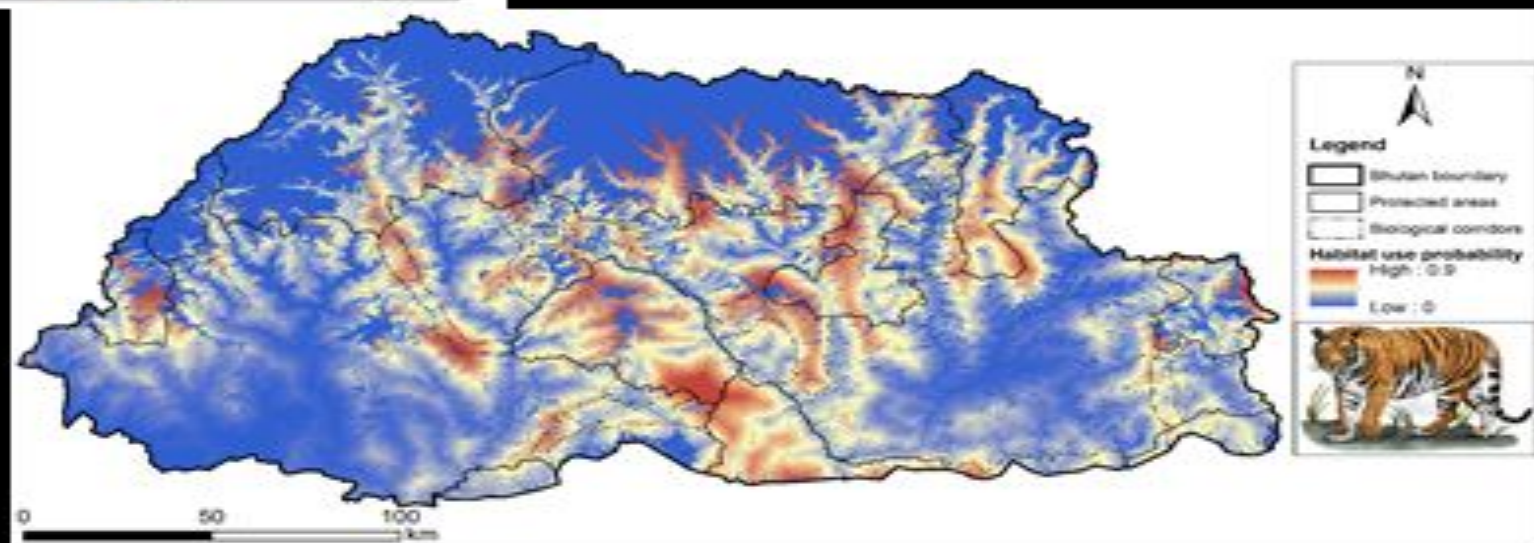
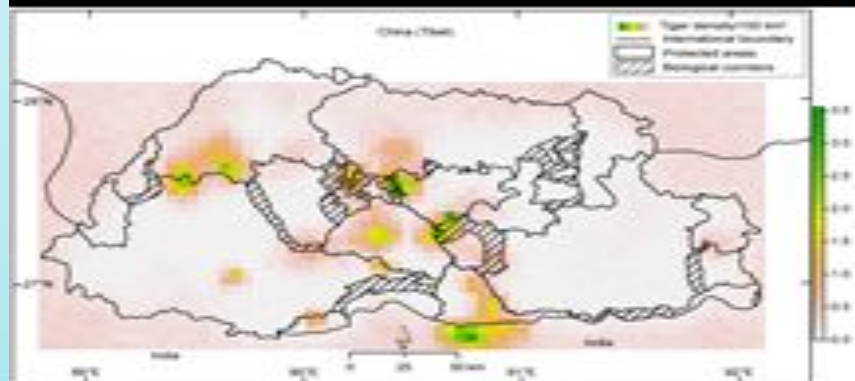


National Tiger Survey

Extensive camera trap survey
1129 grids covering 28,22 km²



Tiger Density

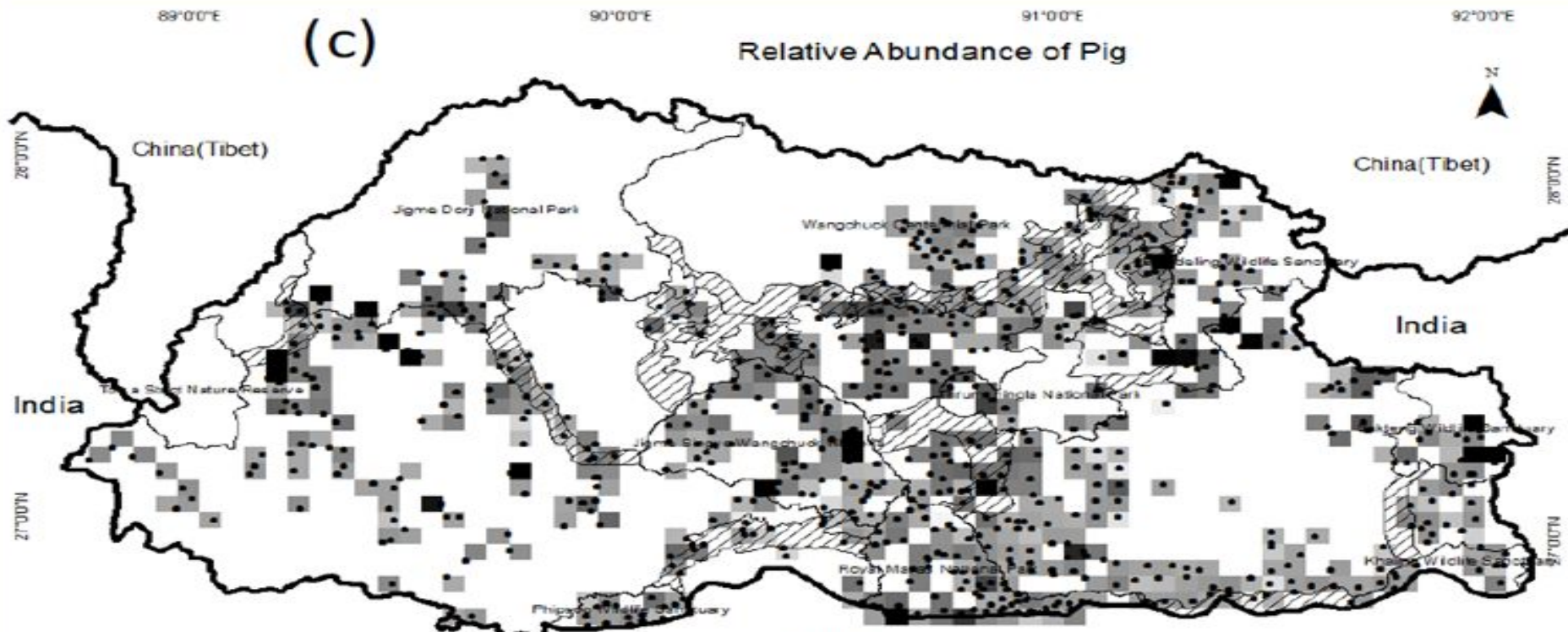


Diversity of prey species



(c)

Relative Abundance of Pig



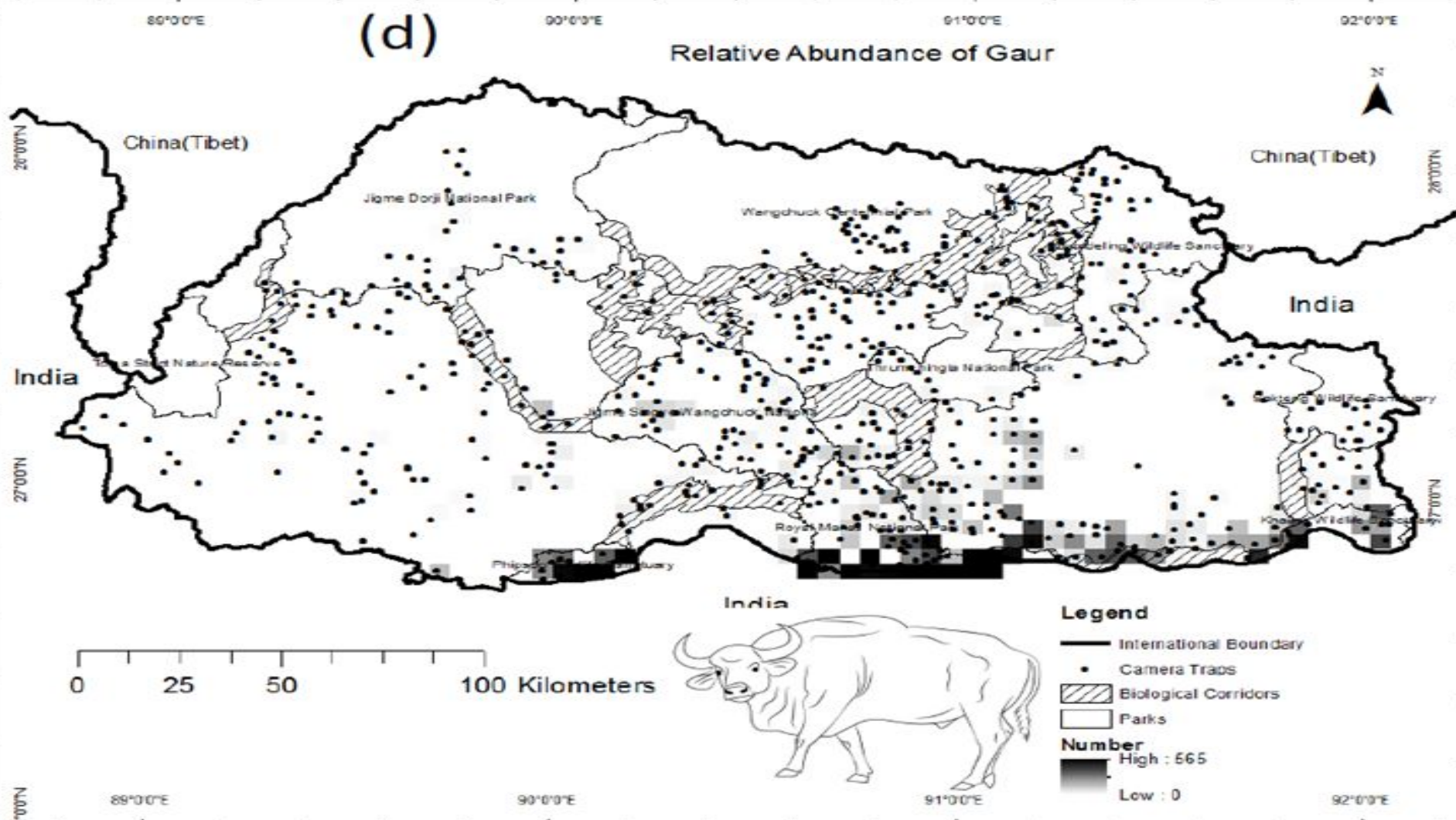
0 25 50 100 Kilometers

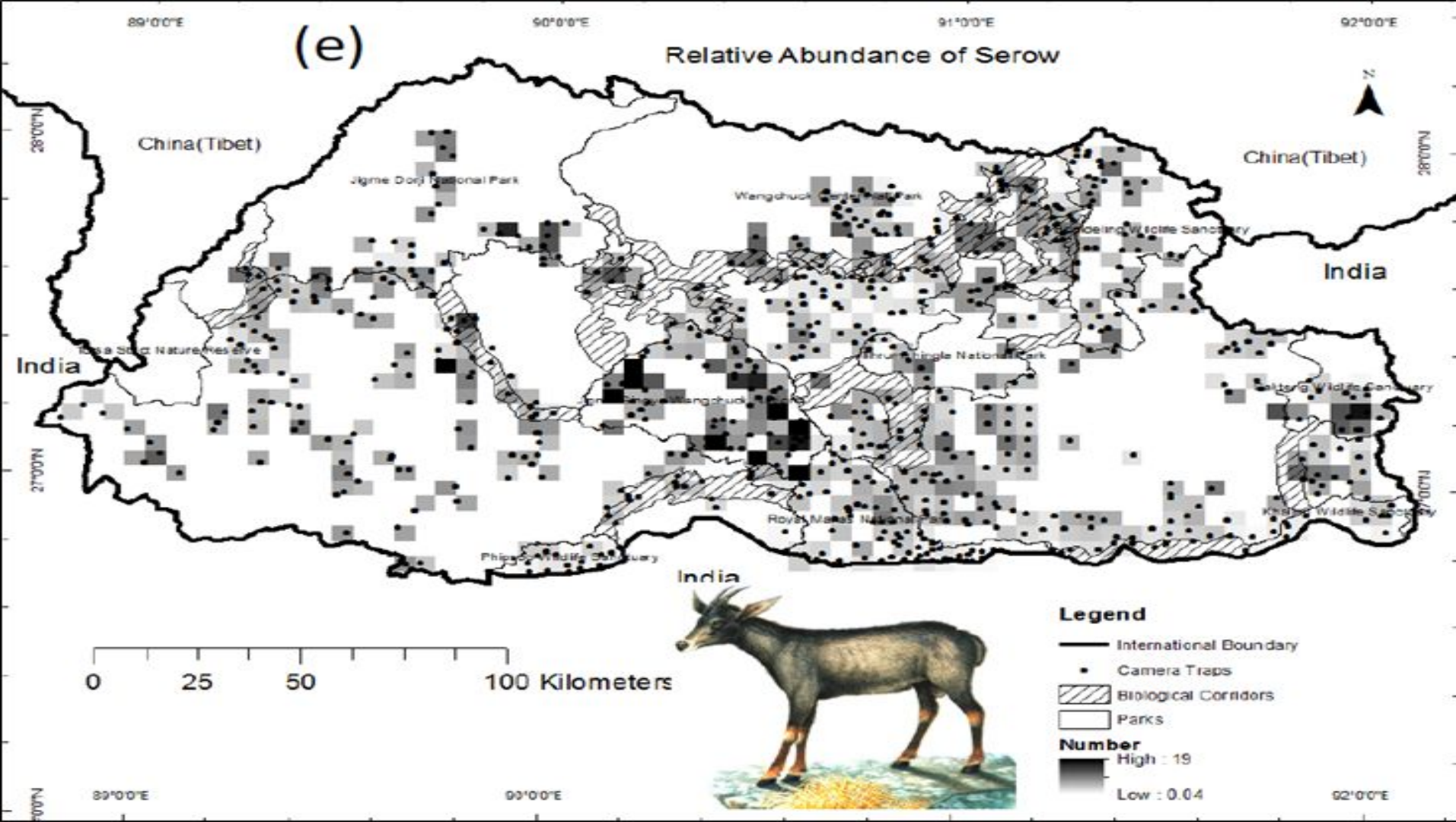


Legend

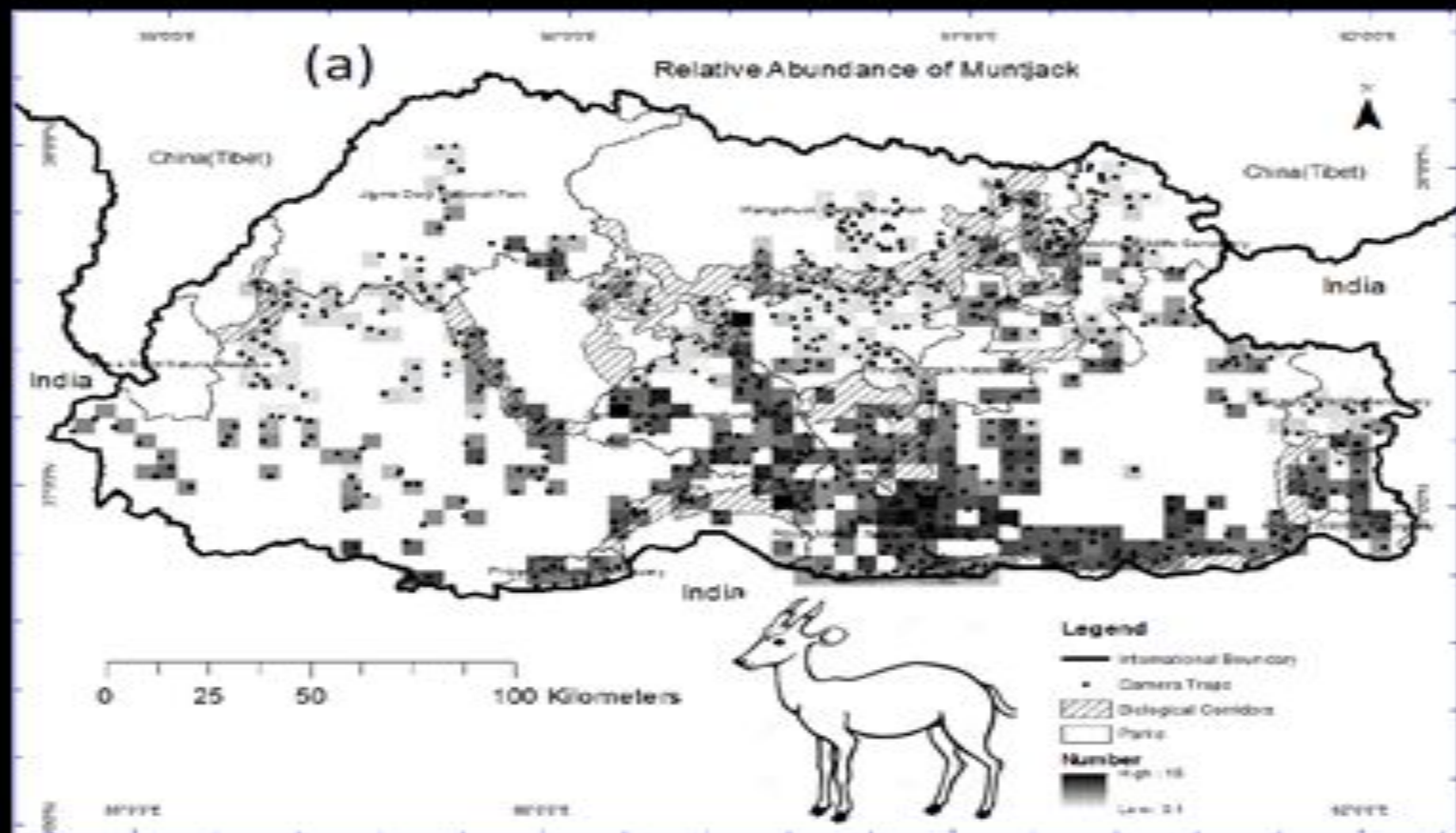
- International Boundary
- Camera Traps
- ▨ Biological Corridors
- Parks
- Number**
High : 65
Low : 1

88°00'E 90°00'E 92°00'E



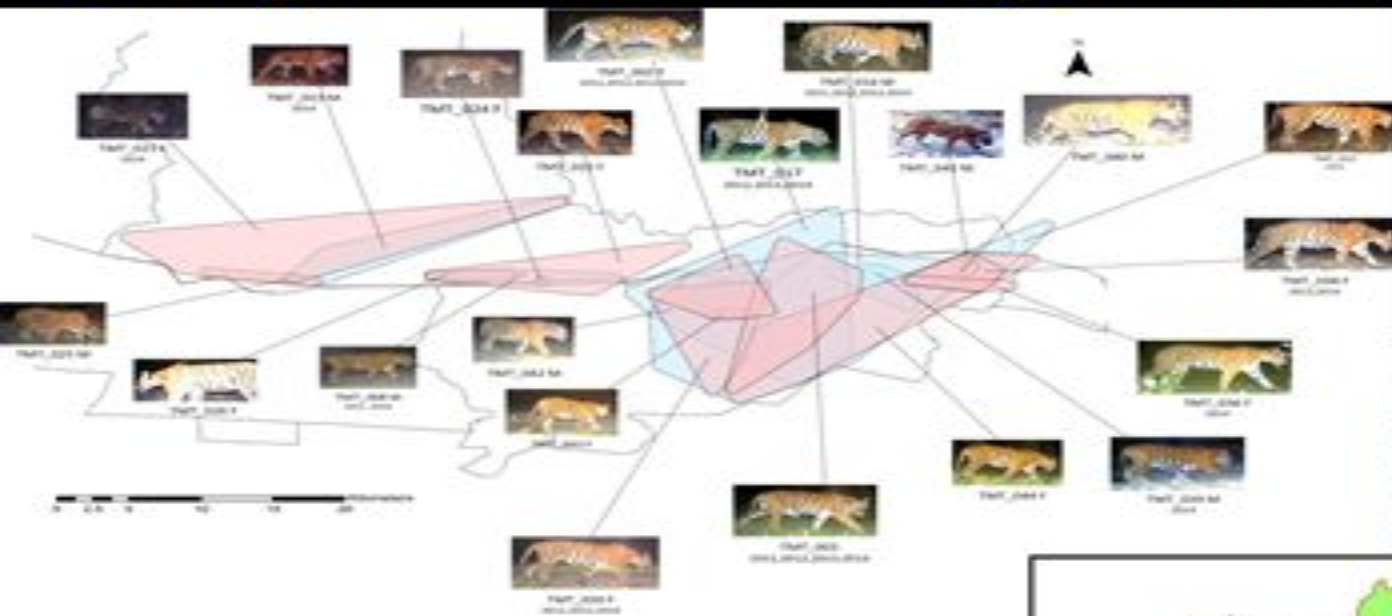


Barking deer relative abundance

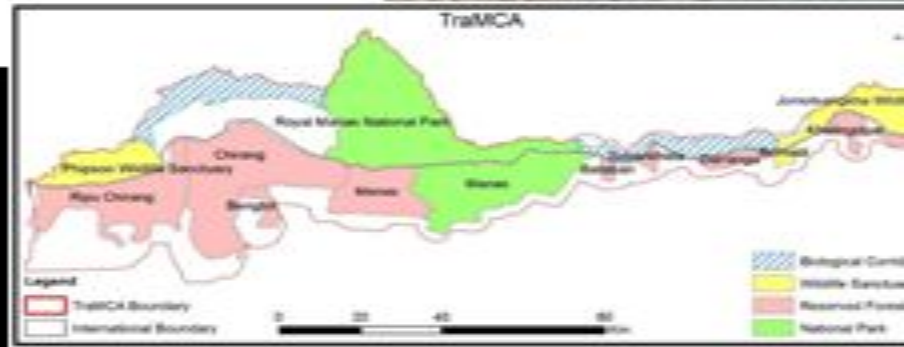


Achievements

Strengthen transboundary conservation



699 Km of Indo-Bhutan border require transboundary initiatives



Green infrastructure polices



D. FPS / NECS stopped NH
construction since 2008

PABC Revision – Why?



- Geo-Administrative and management needs
- Predator-prey movement ecology (spatio-temporal)
- Securing habitats within PA and through BC)
- ICDP requirement (livelihood, ecotourism, HWC, outreach & education, etc.)
- Trans-boundary conservation needs
- In-situ conservation

PABC 2020



- **8% (3307 sqkm)**
- **Equal legal and management status as PA**

Way Forward

- Conducting Corridor Functionality Study
- The protection of corridors through the limitation of land-use changes around protected areas requires a favourable legal framework, the legal status and protection accorded to corridors
- Stakeholder's participation in deciding the land-use policy in and around corridors - Pronghorn wildlife corridor in West USA

contd....

- Development and Implementation of Corridor Management Plan
- Strategies for reclaiming forest land, relocation of villages and minimise impact of commercial establishments in the corridor
- Regulation of open grazing and minimize risk of disease spread in the corridor
- Regulation of traffic on NH-121, usage of eco bridges, overpasses and underpasses for easy movement of wildlife
- Enhancing protection in the corridor through public education and awareness
- Habitat management in corridors- removal of invasive alien species, grass development and planting of trees, making of water holes

“What we have learned was that conservation depends not only on protection but also on connection”

-Thomas E. Lovejoy and Edward O.
Wilson