

# Implications of Mega-species Monitoring to Sustainable Protected Area Management: A Case of Tiger and Prey-base Monitoring in Nepal



Maheshwar Dhakal, PhD

Department of National Parks and Wildlife Conservation

Bishwa Nath Oli

Department of Forests

Diwakar Chapagain

WWF Nepal

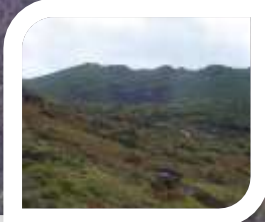


# Floral Biodiversity

8,848m



**Alpine scrubs & meadows**



**Sub-alpine forest**



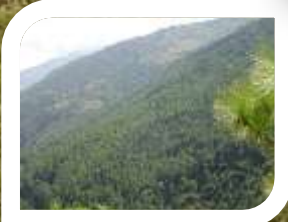
**Temperate needle-leaved forest**



**Temperate broad-leaved forest**



**Subtropical needle-leaved forest**



60m from MSL ←

200 km

→ 60m

# Faunal Biodiversity

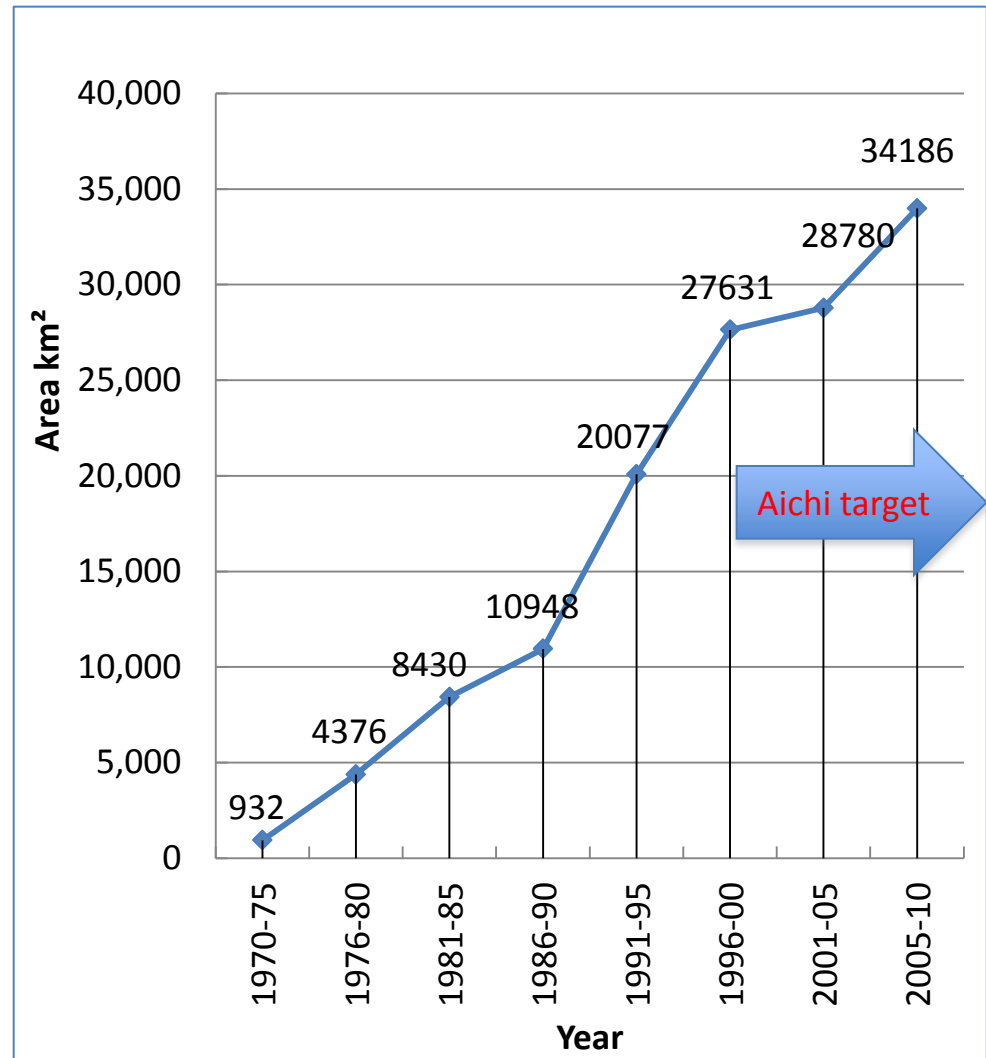


8,848m

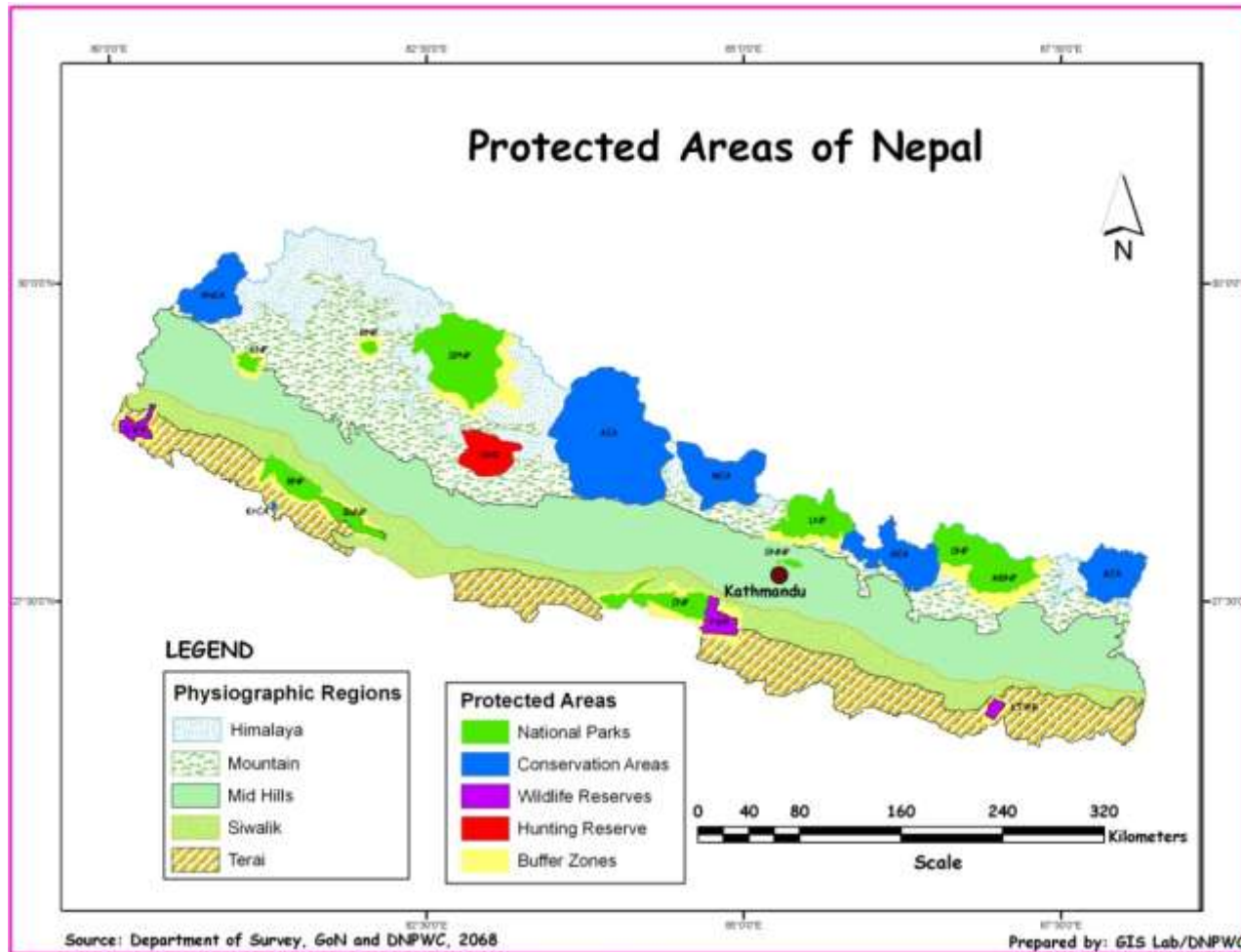
60m from MSL ← 200 km → 60m

# Protected Area System in Nepal

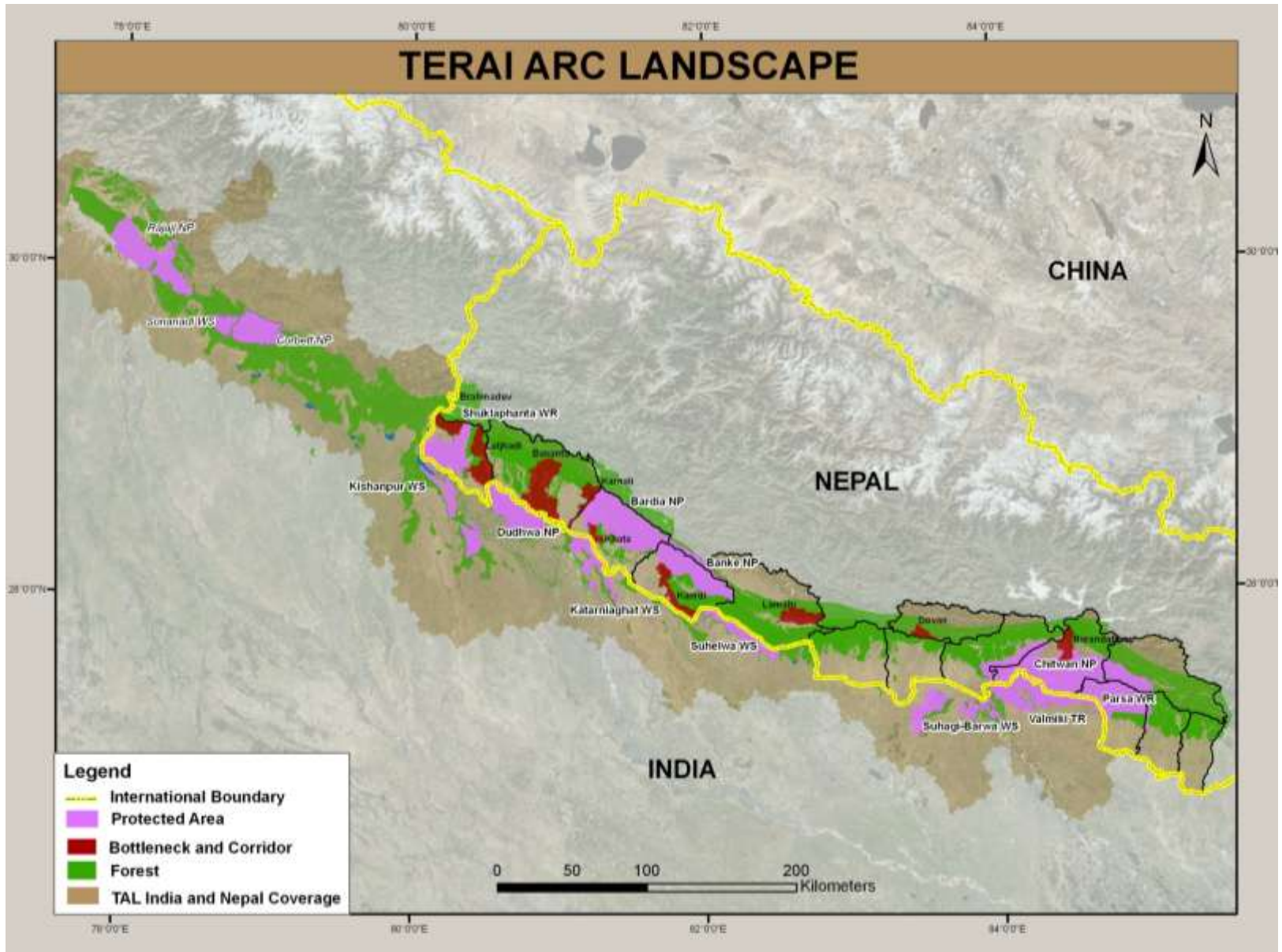
- National Parks = 10
- Wildlife Reserve = 3
- Conservation Area = 6
- Hunting Reserve = 1



# Protected Area Distribution in Nepal



# Terai Arc Landscape

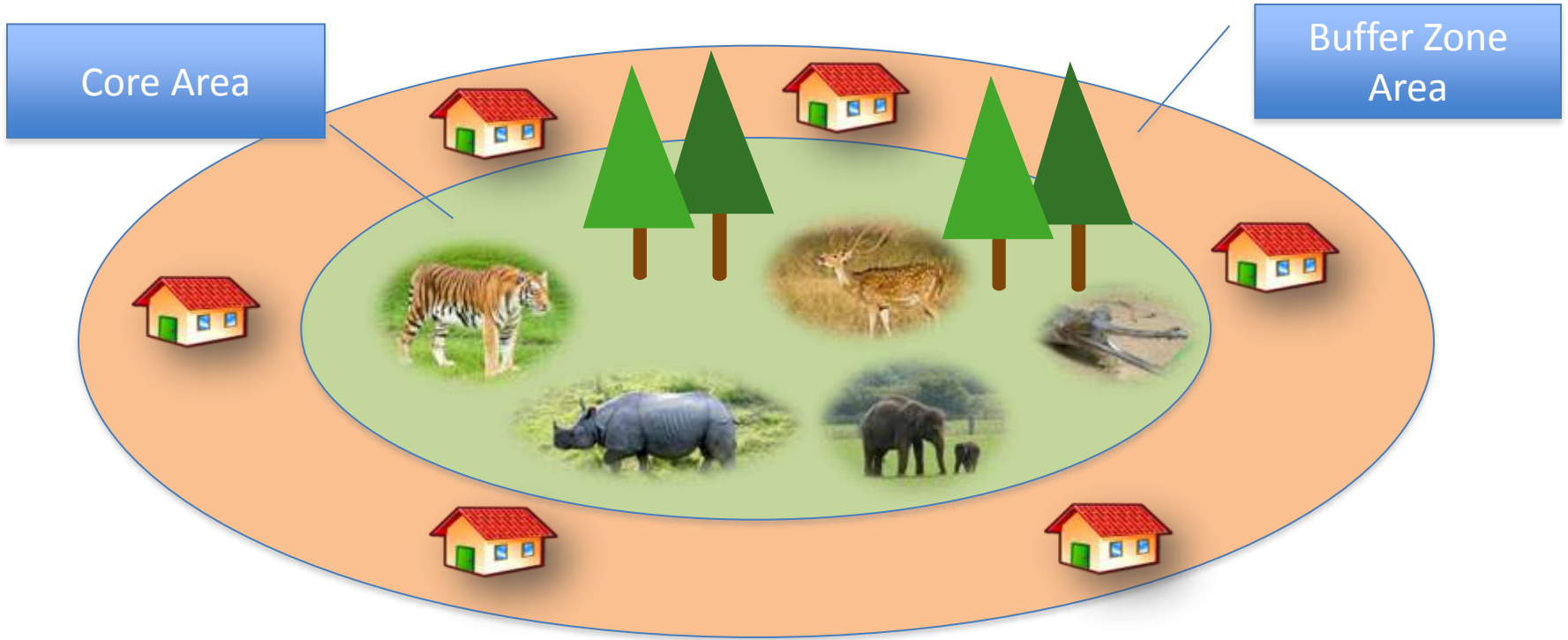


# Tiger Protected Areas in TAL

S N	Protected Area	Core Area (km <sup>2</sup> )	Buffer Zone (Km <sup>2</sup> )	Major Mega species
1	Chitwan National Park	932	751	Tiger, Elephant, Rhino, Crocodiles, Bison
2	Bardia National Park	968	507	Tiger, Elephant, Rhino, Crocodiles
3	Banke National Park	550	343	Tiger
4	Parsa Wildlife Reserve	499	298	Tiger, Elephant, Rhino, Bison
5	Shuklaphanta Wildlife Reserve	305	244	Tiger, Elephant, Rhino



# Managing the protected areas



What will be the implications if both human and wildlife population constantly increased?

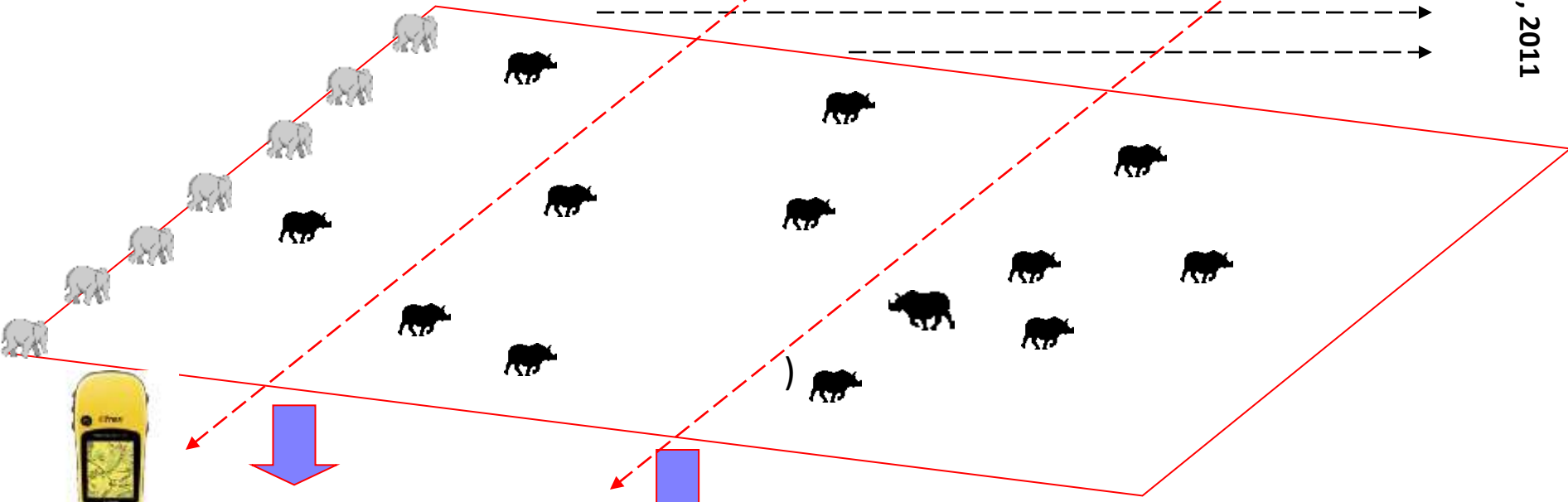


# Rhino Count Method



April 23, 2011

April 5, 2011



Data-sheet Collection

Data-sheet Collection

Data-sheet Collection

= Total Rhino

SWR=7



BNP=24



CNP=503



Nepal =534

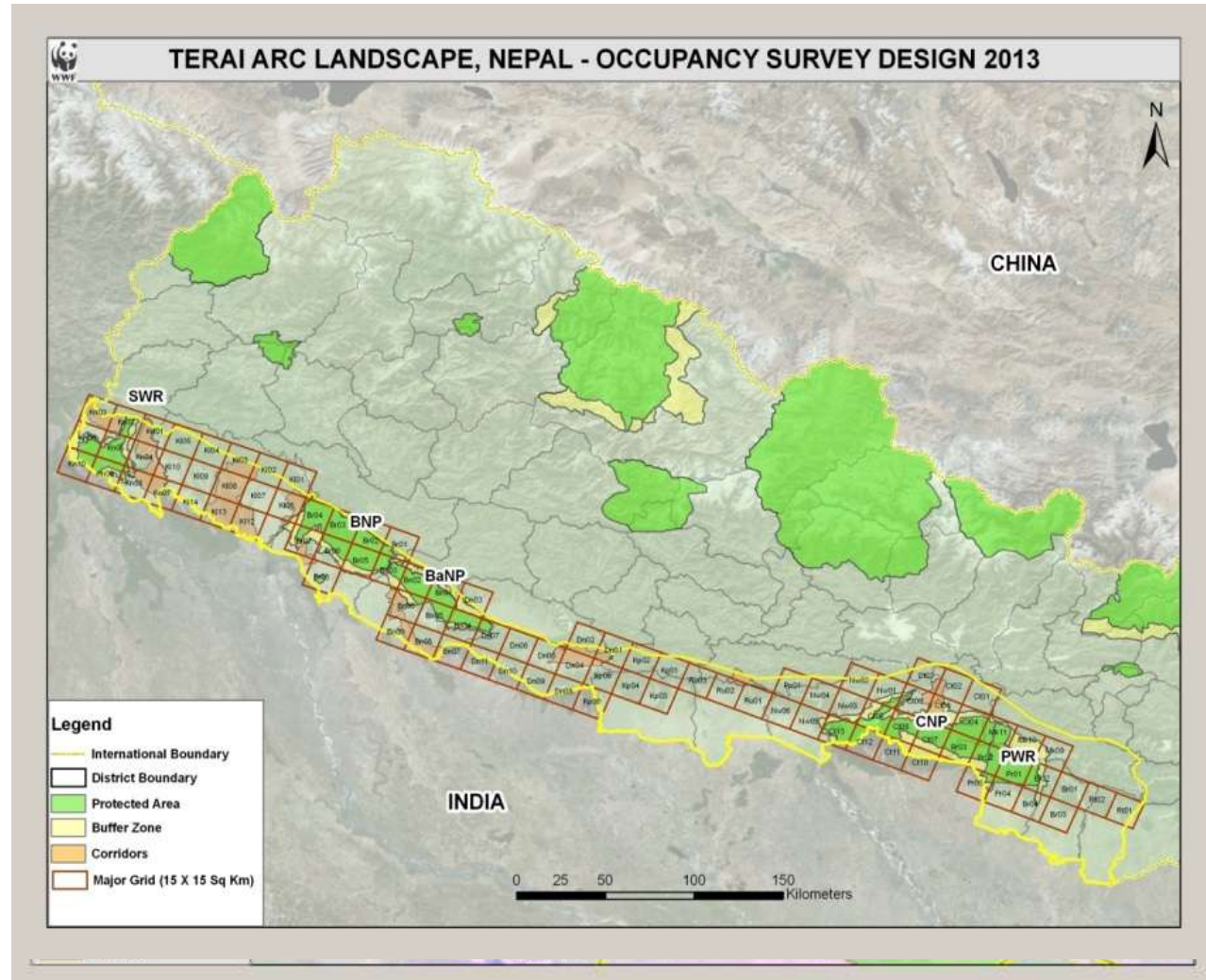


# Trend of rhino Population in Nepal

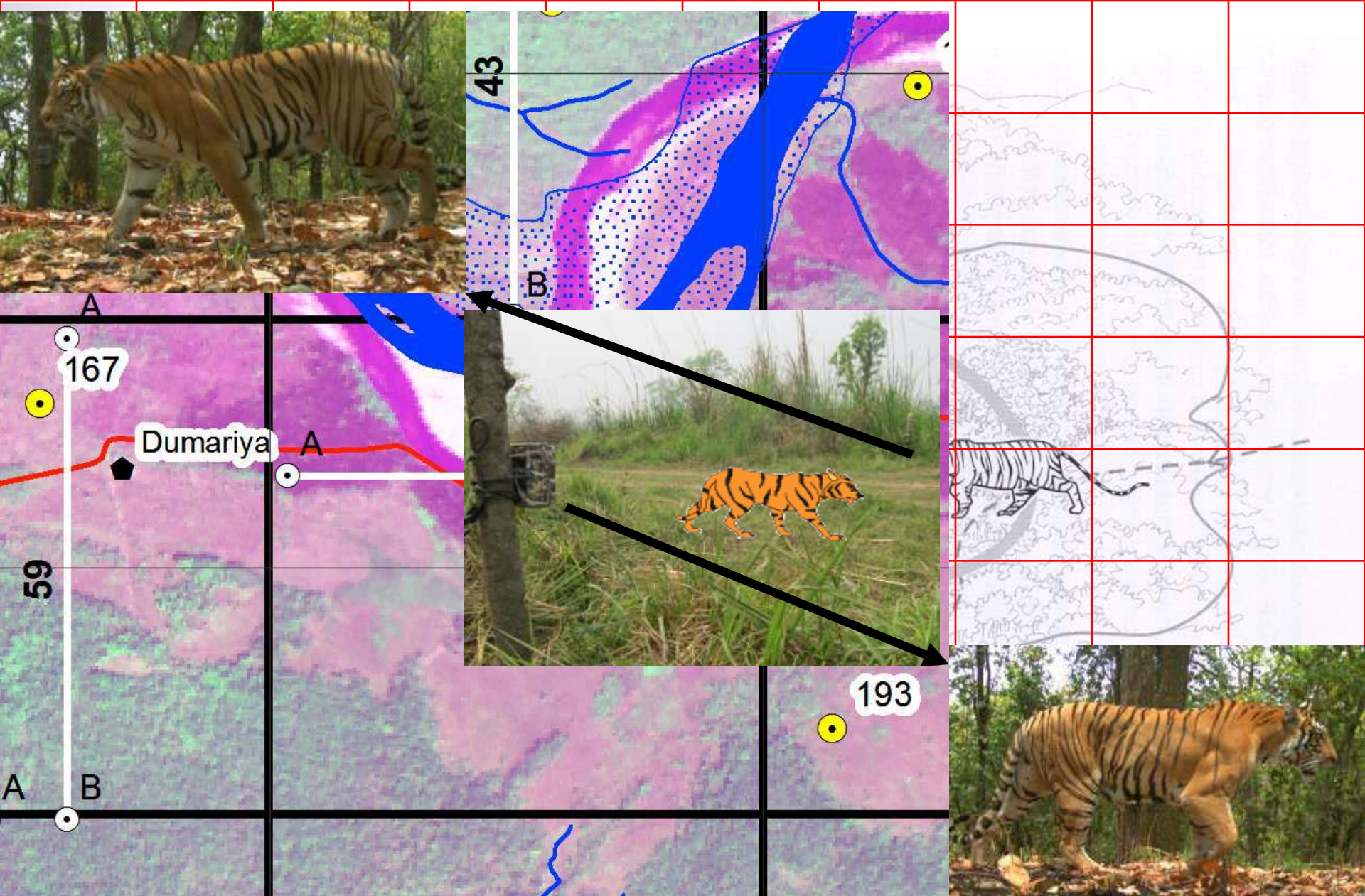


# Tiger and Prey-base monitoring

- Camera trapping
- Line transect
- Occupancy survey



# Camera trapping

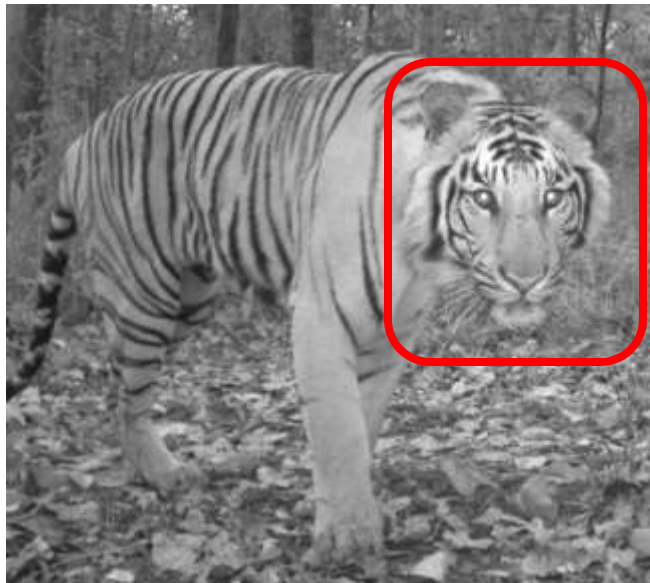


# Individual Identification

**Body  
stripes**



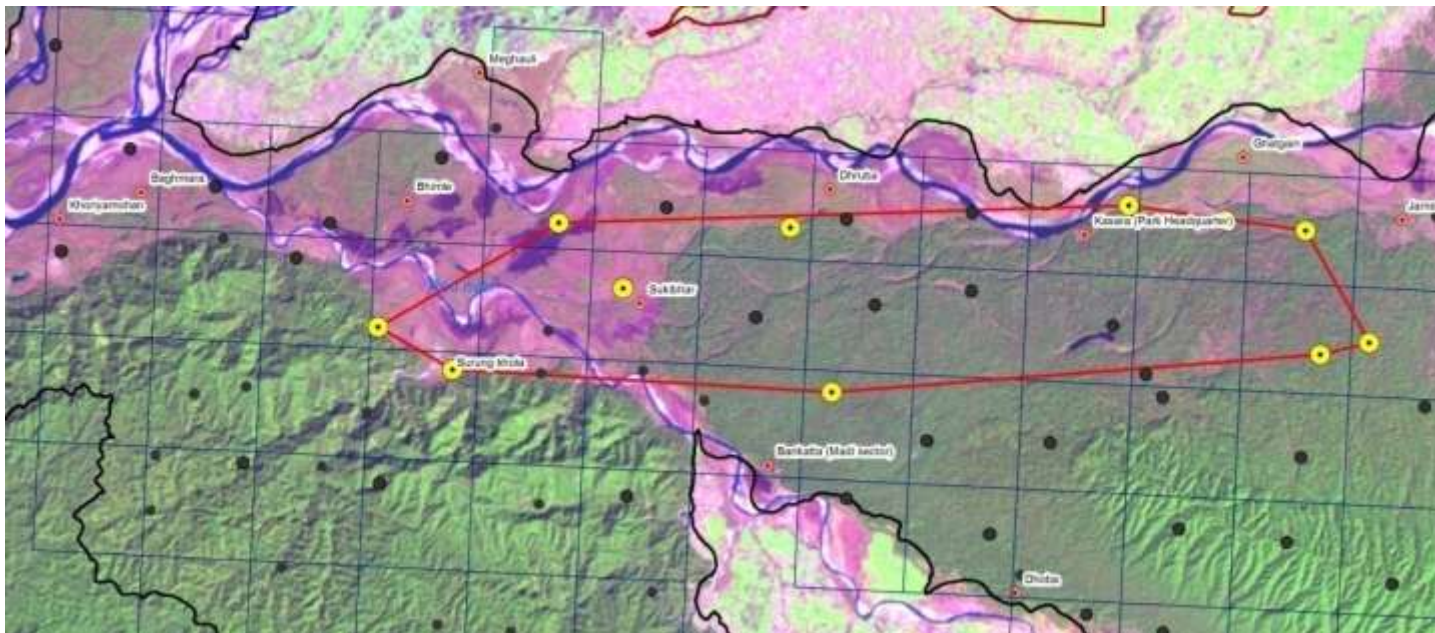
**Facial  
Marking**



# Same Individuals in Different Camera

- A male tiger (CNP13\_MBB\_18) recorded from 10 different locations

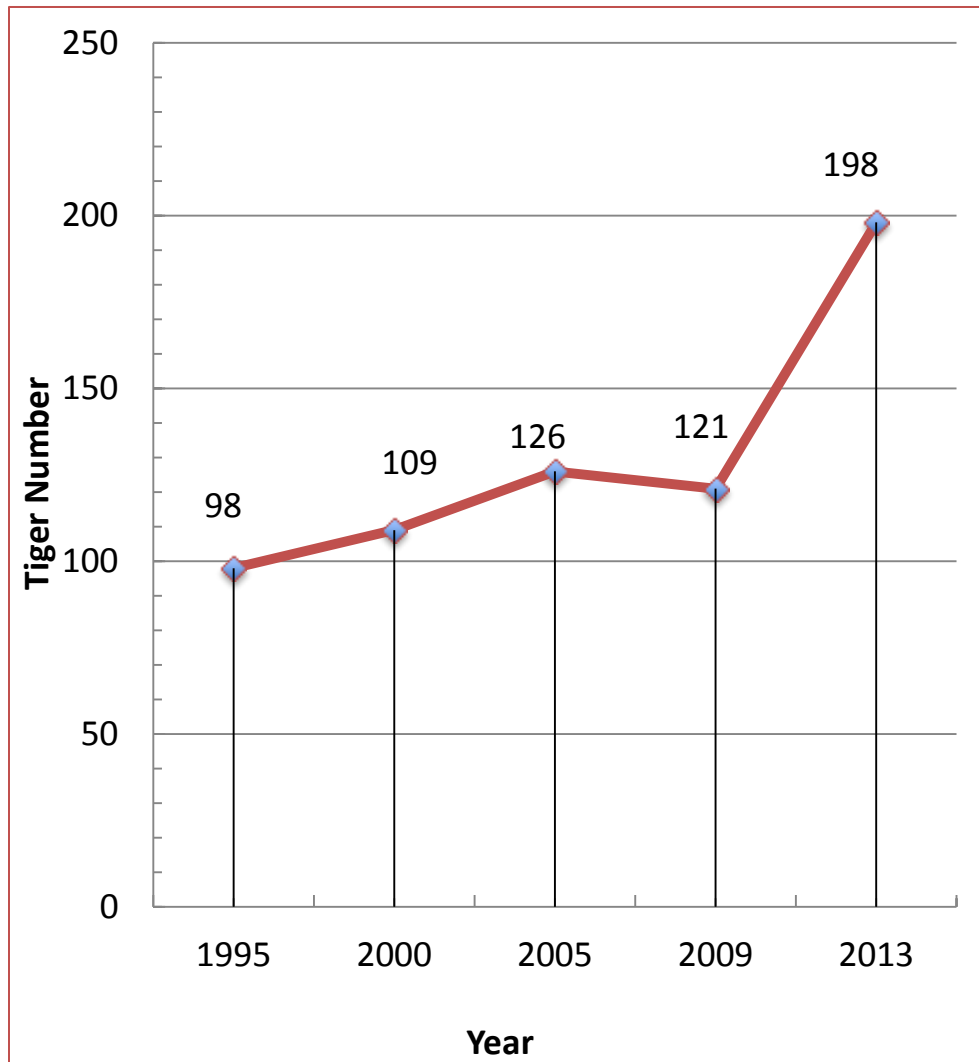
(Map below)



# Results - SPACECAP

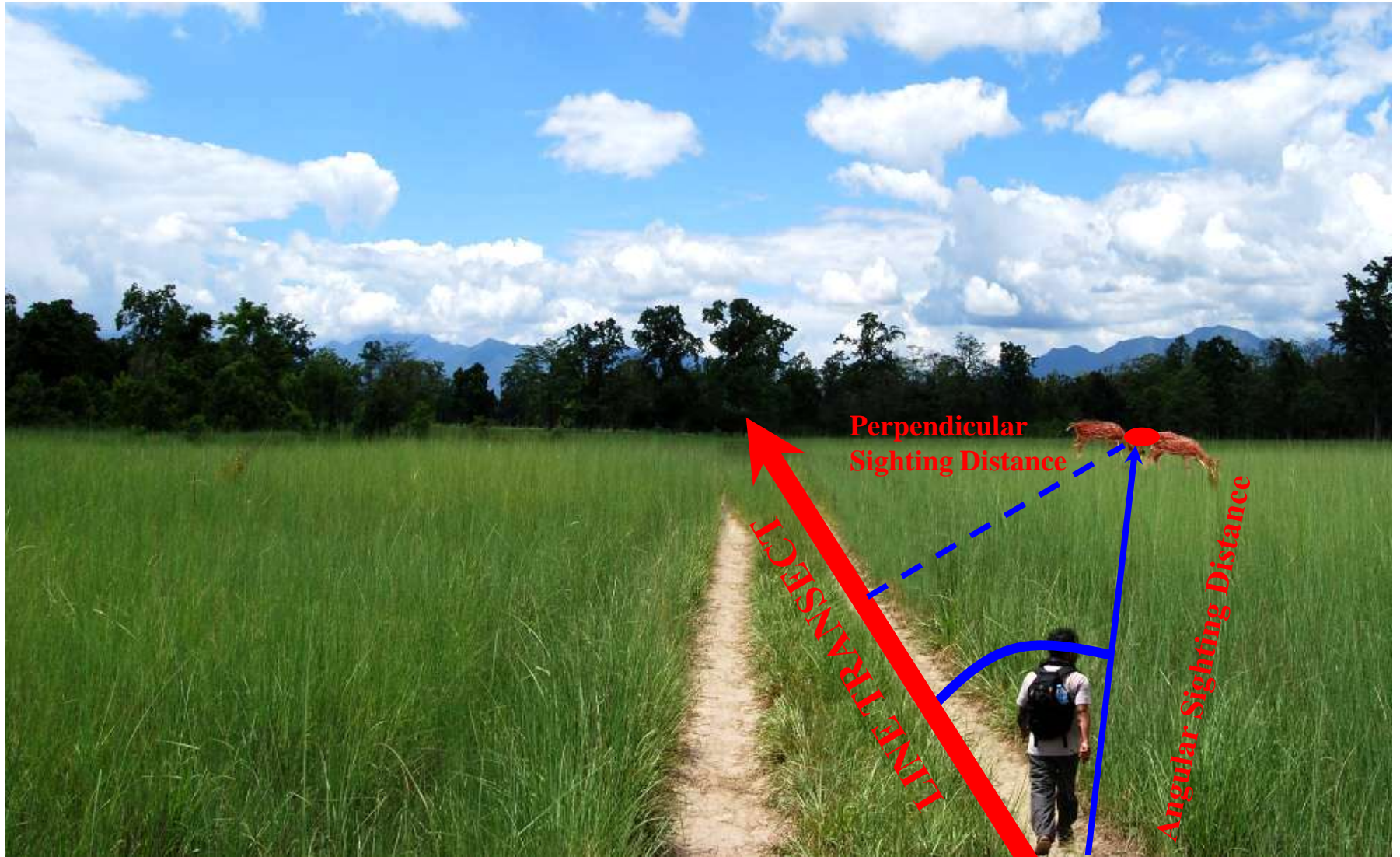
SN	Protected area	Estimated Population			Density/100 km <sup>2</sup>	
		Mean	SD	95% CI	Density	SD
1	Parsa WR	7	2.9	4-13	0.65	0.3
2	Chitwan NP	120	10.6	98 - 139	3.84	0.3
3	Banke NP	4	1.2	3-7	0.16	0.1
4	Bardia NP	50	2.85	45-55	3.38	0.2
5	Shuklaphanta WR	17	2.27	13-21	3.4	0.4
	<b>TOTAL</b>	<b>198</b>		<b>163 - 235</b>		

# Trend of Tiger Population in Nepal





# Prey Monitoring (Transect Method)



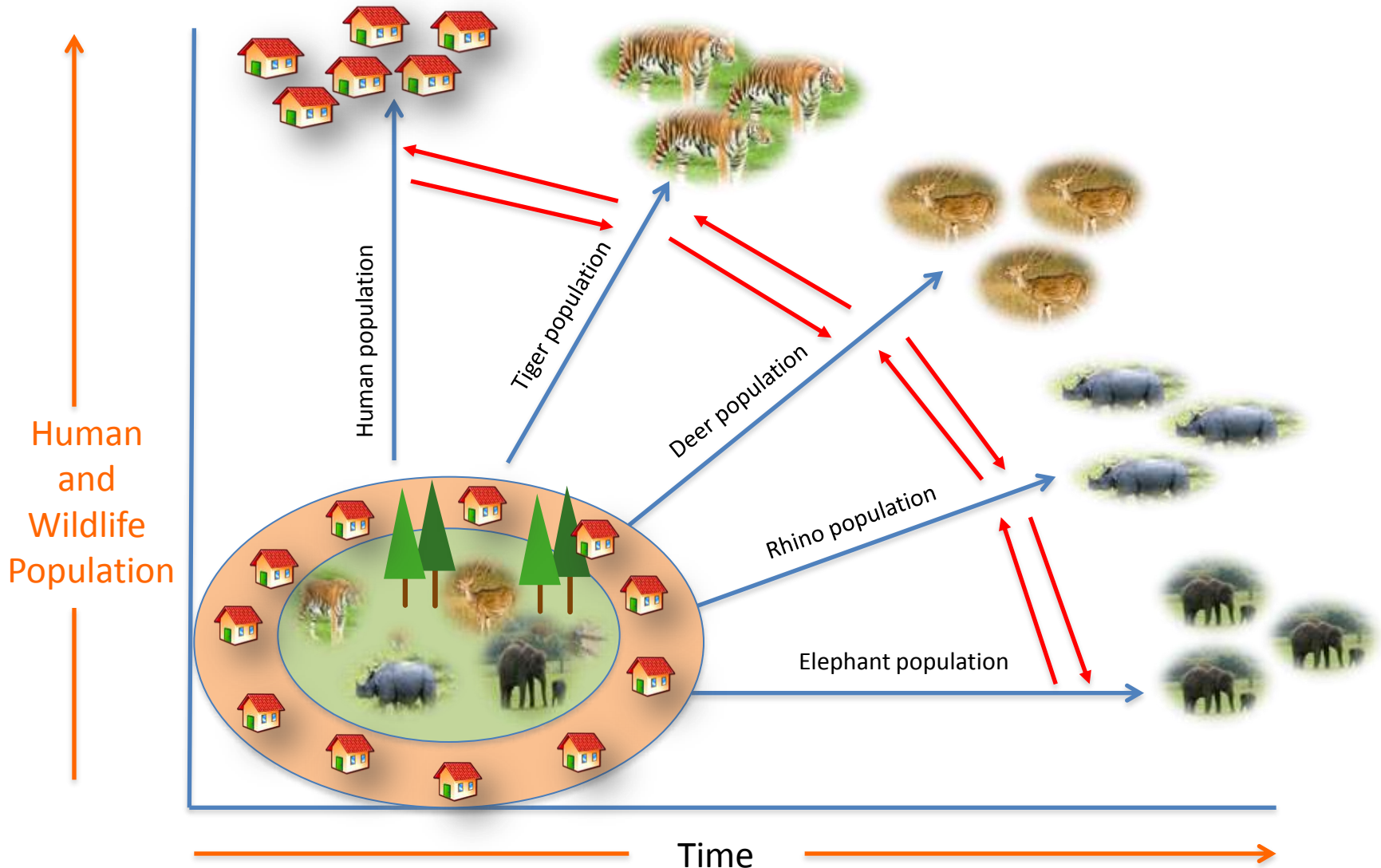
# Prey Species



# Result – Prey

SN	Protected area	Estimated Details			Density/ km <sup>2</sup>	
		Effort (km)	Transects Number	Observation Number	Density	SE
1	Parsa WR	286	147	133	25.33	3.9
2	Chitwan NP	498	261	376	73.63	9.08
3	Banke NP	334	75	55	10.27	6.34
4	Bardia NP	398	219	571	92.6	8.8
5	Shuklaphanta WR	154	82	114	78.62	16.44

# Mega Species Population increase

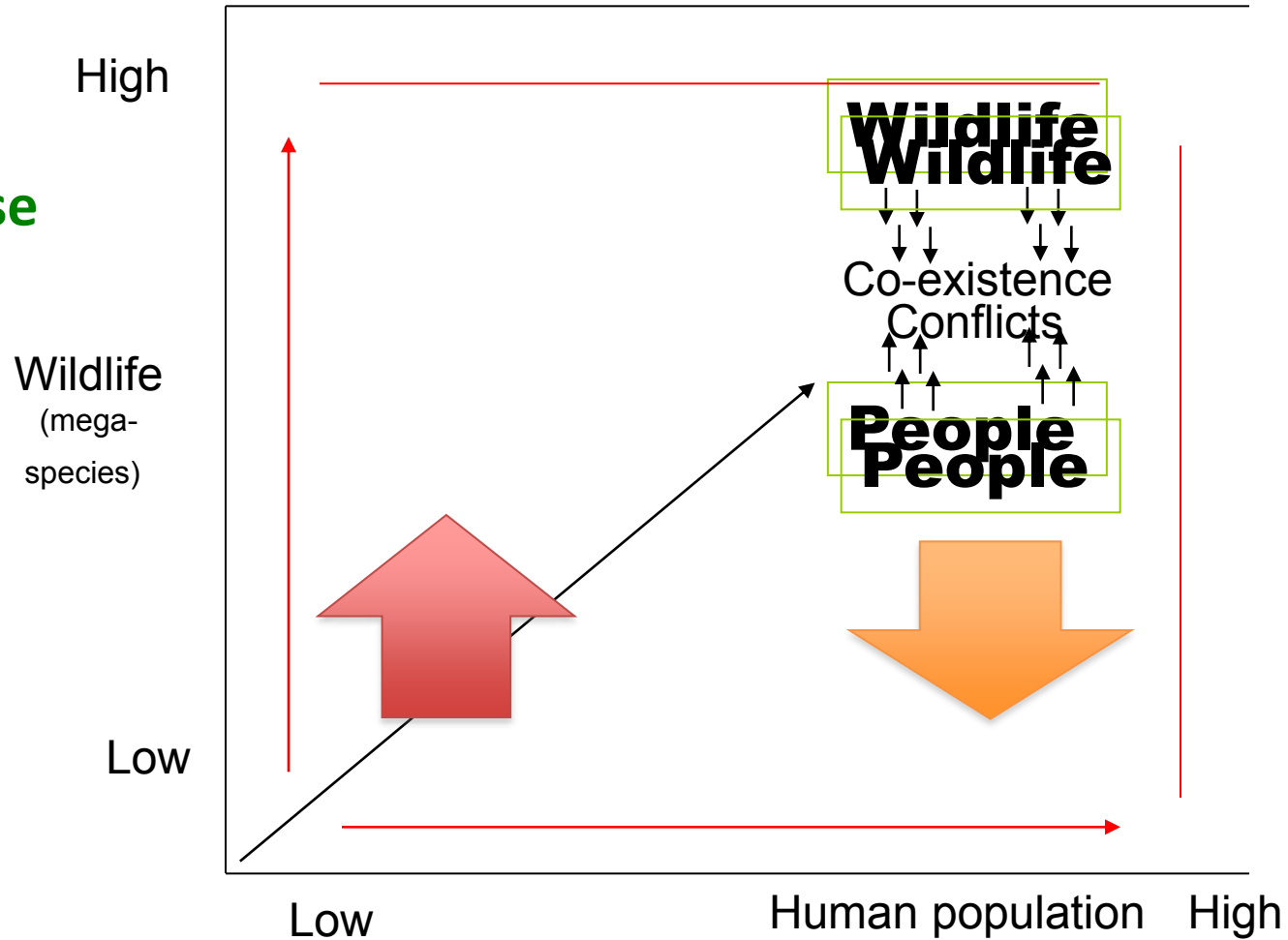


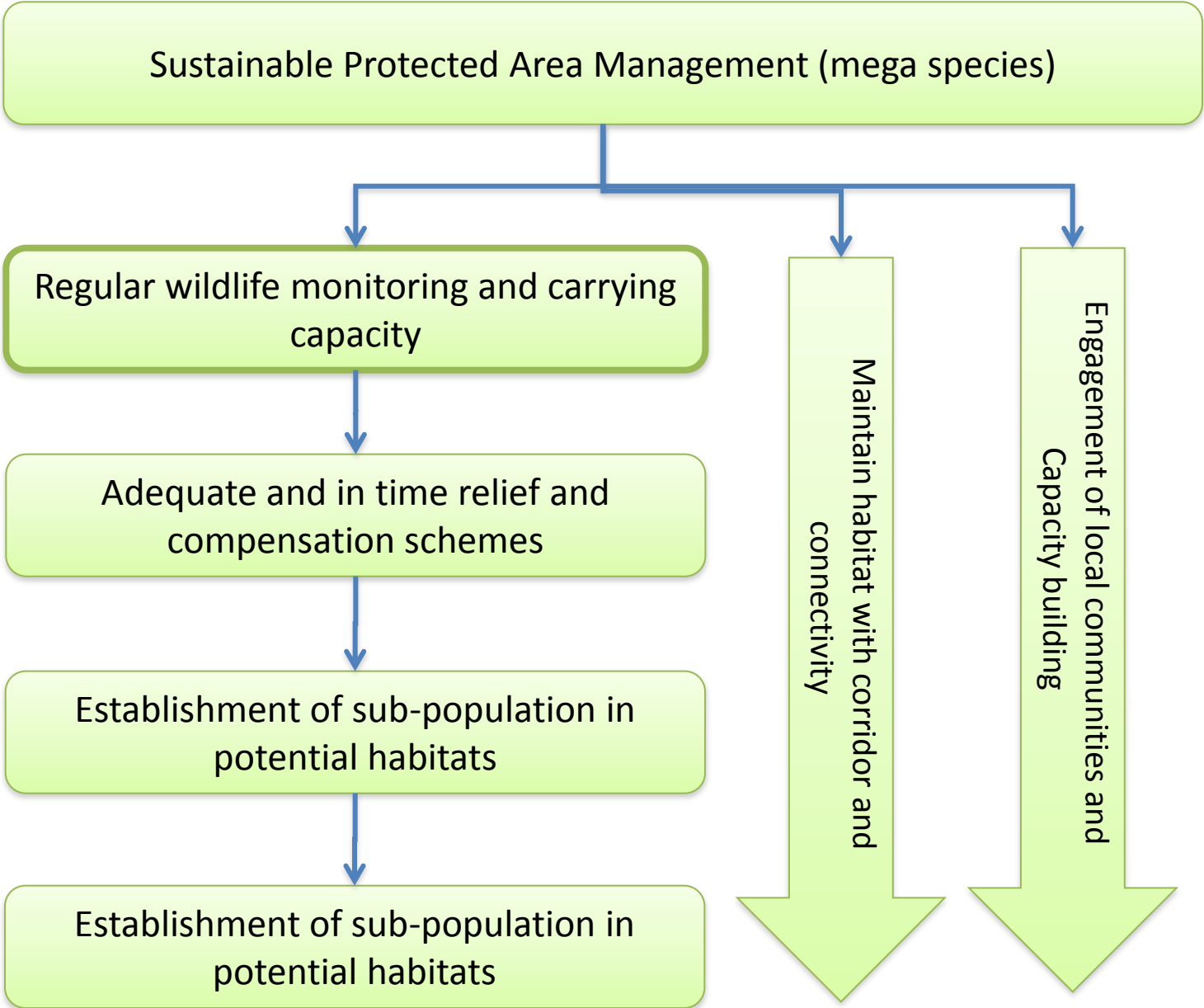
# Implication of mega-species increase

1. Space: **constant**
2. Wildlife: **increase**
3. Human **population:**  
**Increase**



What will be the next?







**Thank You**