

PENCH TIGER RESERVE,
NAGPUR, MAHARASHTRA

M-STripES

Implementation
Annual Report

April-2022 To March-2023



PREFACE

The Pench Tiger Reserve, a jewel of India's wilderness, has always been at the forefront of wildlife conservation. Among the most impactful of these initiatives is the implementation of M-STripES (Monitoring System for Tigers - Intensive Protection and Ecological Status), a groundbreaking monitoring system that has revolutionized the way we monitor and protect our precious wildlife. This report analyzes the data of M-STripES during 2022-23.

The present report consist of division and range level patrolling data. Besides, it has data of patrolling being done at various level. The map created level on the entry of data in ecological module has enhanced our understanding of the distribution of various animal across the Tiger Reserve and need of our conservation. I am confident that present report will help in better monitoring of staff patrolling and will enhance protection region of Pench, Maharashtra.

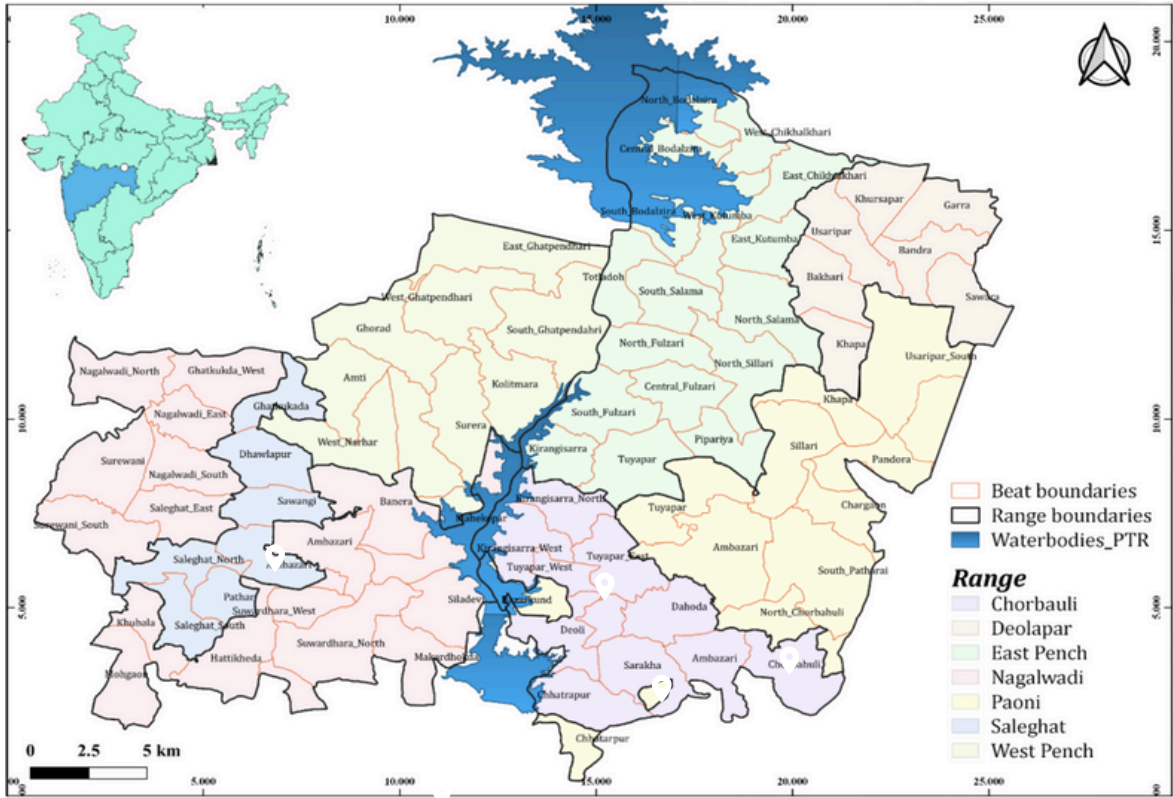
Dr. Prabhu Nath Shukla (IFS)
Deputy Director, Pench Tiger Reserve,
Nagpur (Maharashtra)



Introduction

A Brief Story About The Pench Tiger Reserve, Maharashtra

Pench Tiger Reserve situated in the northern part of eastern Vidarbha is spread in Ramtek, Parseoni and Saoner tehsil of Nagpur district. It is the 25th tiger reserve of India. The Pench Tiger Reserve (PTR) which derives its name from its lifeline - the River Pench is spread over 741.41 Sq.km of area. It consists of a core area (439.84 sq km) of 5 ranges: East Pench, West Pench, Deolapar, Chorbahuli and Saleghat; and a buffer area of (205.03 sq km) comprising 2 ranges: Paoni and Nagalwadi. MSTripES was started in Pench Tiger Reserve since May 2016.



Location Map of Pench Tiger Reserve, Maharashtra



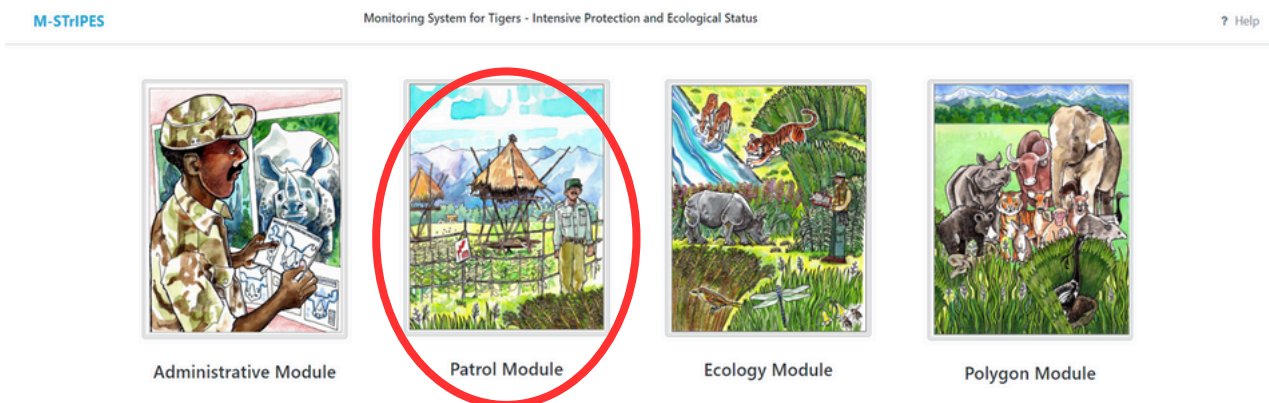
Introduction of M-STripES

The “M-STripES” has been designed to address this void. It is a platform where modern technology is used to assist effective patrolling, assess ecological status and mitigate human-wildlife conflict in and around tiger reserves.

The M-STripES program uses Global Positioning System (GPS), General Packet Radio Services (GPRS), and remote sensing, to collect information from the field, create a database using modern Information Technology (IT) based tools, analyses the information using GIS and statistical tools to provide inferences that allow tiger reserve managers to manage their wildlife resources better. Different modules present in the system are -

a. Patrol Module

The patrol module maintains a spatial database of patrol track logs, crime scenes with geotagged photographs and important observations made by field staff while on different types of patrol duties. The phone app allows visualization of all patrols in real time across the country when in cellular network connectivity. It also permits the guard to send geotagged location data to specified phone numbers in case of emergency (SOS) function. The mobile app can continue to operate in areas without a phone network by using the phone’s inbuilt GPS and preloaded base maps.



b. Ecological Module

The tiger reserves of India use a set of standardized protocols for ecological monitoring by field staff which include the following components:

- 1) Occupancy of carnivores and large ungulates,
- 2) Abundance estimation of ungulates,
- 3) Assessment of anthropogenic impacts and
- 4) Habitat assessment.

The ecological monitoring comprising of the above components are implemented across the country at a spatial resolution of 20 square km every four years and twice

annually within all tiger reserves and these standardized protocols are now part of the **'Ecological Module'** of the M-STrIPES program.

c. Conflict Module

The conflict module of M-STrIPES addresses data recording, achieving, geotagging, and spatial analysis of human-wildlife conflict details. The app has provision for recording the details of attacks on humans, attacks on livestock, crop damage and property damage. This information on location, with spatially referenced photo evidence, and the extent of conflict allows wildlife managers to mitigate conflict with appropriate interventions.

The M-STrIPES app is a mobile-based application used for monitoring patrolling and collecting wildlife data through its ecological module. Its significance in tiger conservation is:

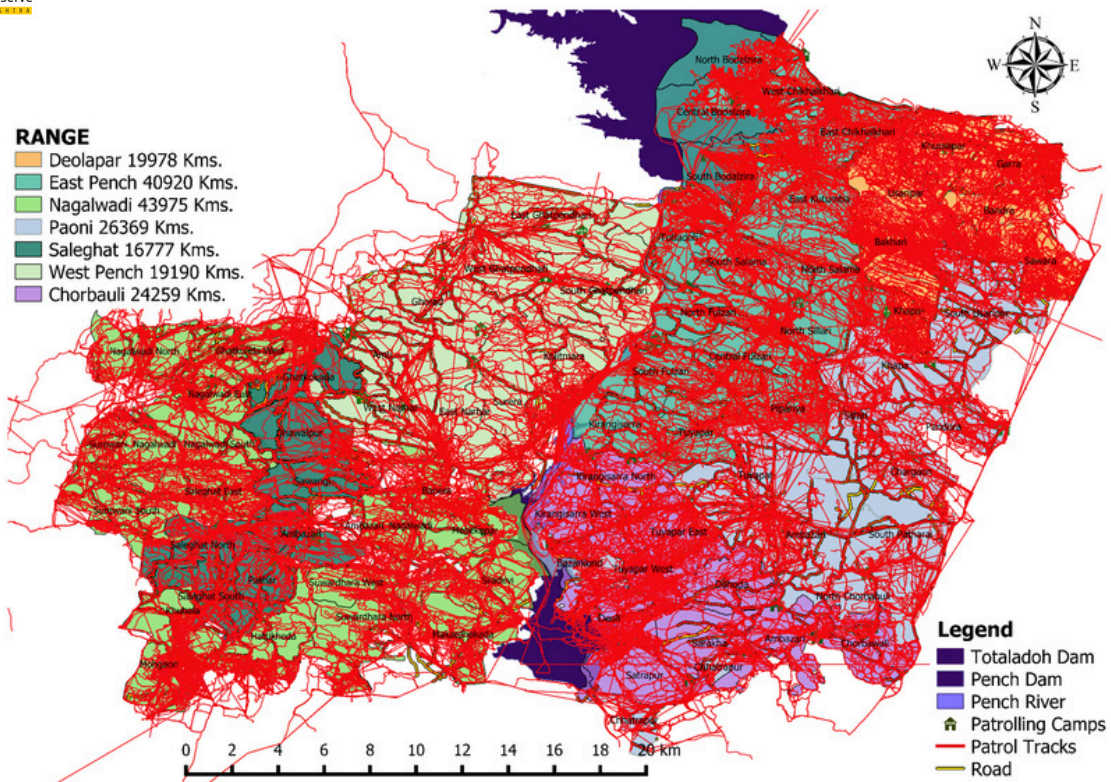
1. Real-time monitoring : Allows forest officials to record and submit patrolling, tiger and other animal sightings, mortalities, and other relevant data in real-time.
2. Spatial tracking : Uses GPS mapping for encountered sightings.
3. Intelligent database : Analyzes data to provide insights on tiger behavior, habitat use, and population trends.
4. Conservation efforts : Informs and optimizes conservation strategies, such as habitat protection and human-tiger conflict mitigation.
5. Data-driven decision-making : Enables data-driven decision-making for tiger conservation and management.

M-STrIPES patrolling done in Pench, Maharashtra during the last few years.

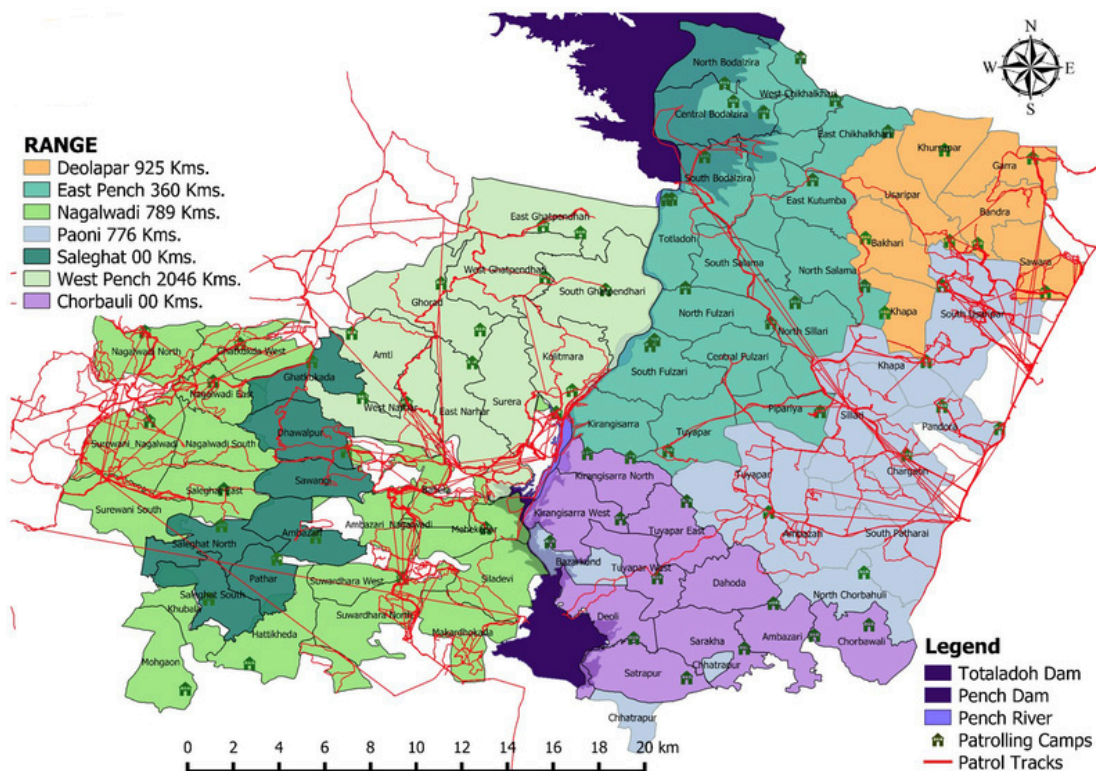
Sr. No.	Year	Total Patrolling (in Kms)	Patrolling intensity in km /sq km area (Total Patrolling /Total area of Pench)
1	2016-17	131352	177.17
2	2017-18	178425	240.66
3	2018-19	188182	253.82
4	2019-20	154277	208.09
5	2020-21	176914	238.62
6	2021-22	201817	272.21
7	2022-23	207409	279.75



Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts – 191468 Kms.



Pench Tiger Reserve, MH. Special Tiger Protection Force (April 2022 to March 2023) Patrol Efforts – 4896 Kms.

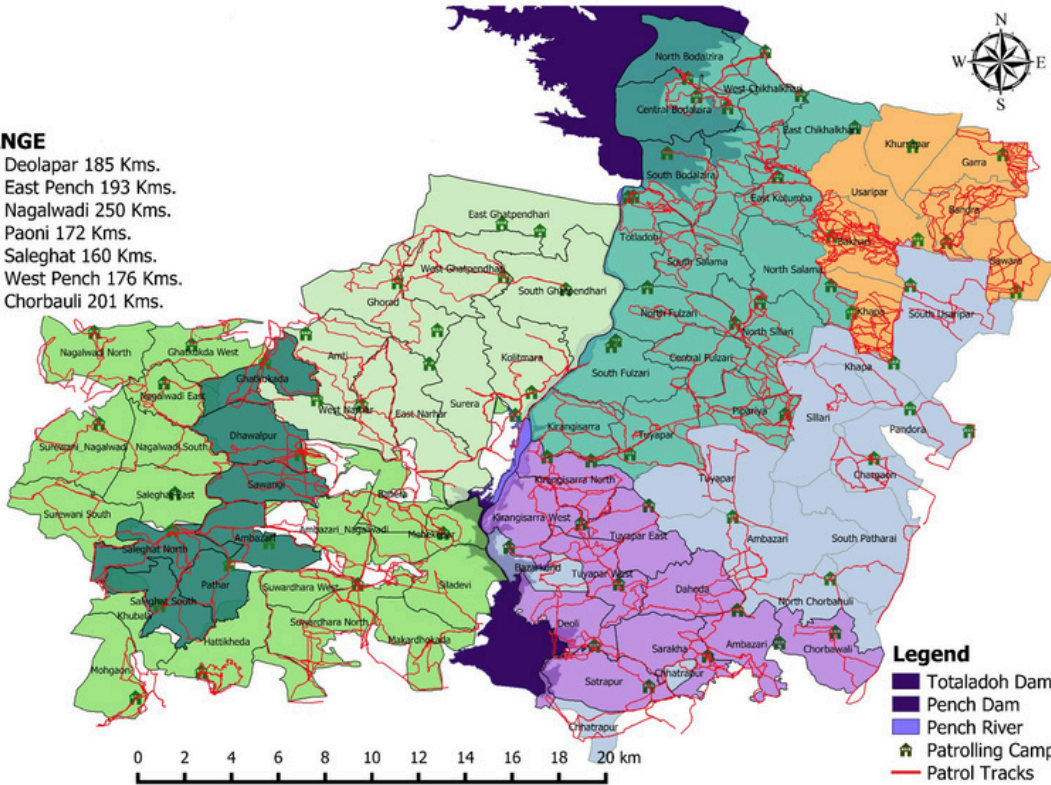




Pench Tiger Reserve, MH. (April 2022 to March 2023) RFO Patrol Efforts - 1337 Kms.

RANGE

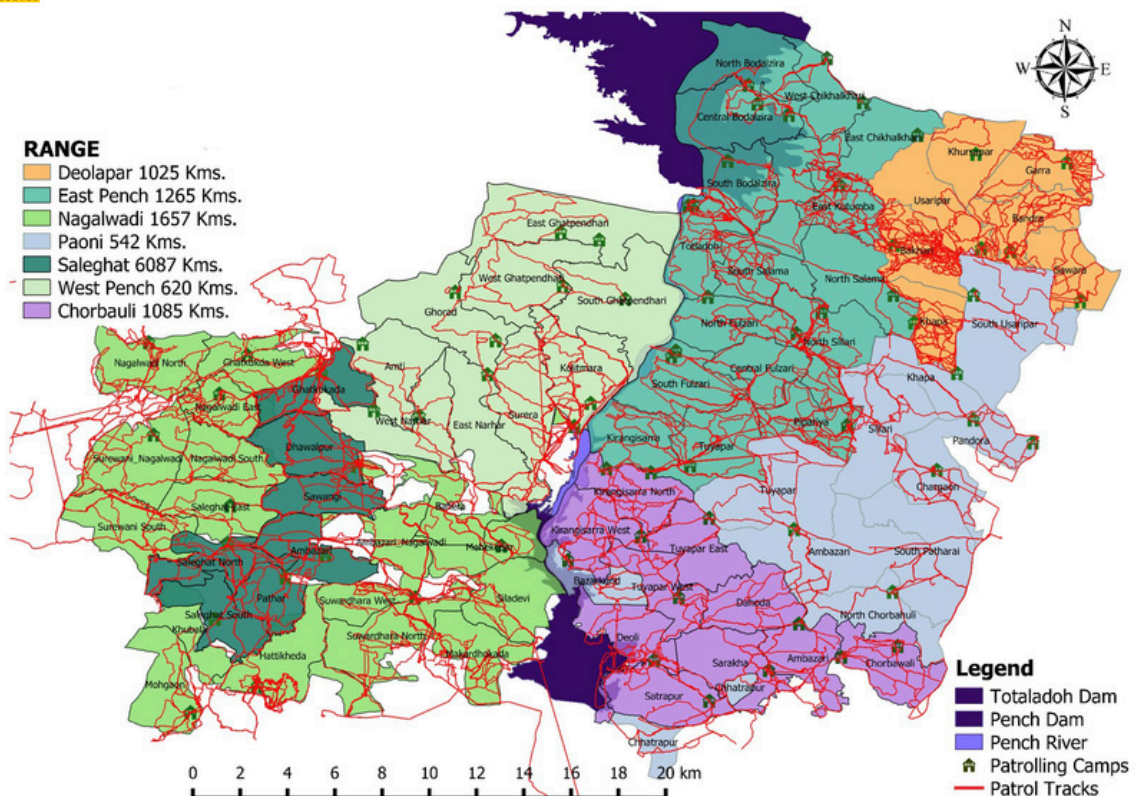
- Deolapar 185 Kms.
- East Pench 193 Kms.
- Nagalwadi 250 Kms.
- Paoni 172 Kms.
- Saleghat 160 Kms.
- West Pench 176 Kms.
- Chorbauli 201 Kms.



Pench Tiger Reserve, MH. (April 2022 to March 2023) RO Patrol Efforts - 12281 Kms.

RANGE

- Deolapar 1025 Kms.
- East Pench 1265 Kms.
- Nagalwadi 1657 Kms.
- Paoni 542 Kms.
- Saleghat 6087 Kms.
- West Pench 620 Kms.
- Chorbauli 1085 Kms.



Highest and Less Patrolling Beat

Range	Highest Patrolling Beat Name	Name of Forest Guard	Kms.
Deolapar	Bandra	Y. B. Patil	2955
	Garra	Punam Sarode	3059
	Khursapar	R. R. Tiwari	2877
	Sawara	Chetan Umathe	2910
East Pench	North Bodalzira	G. B. Munde	2839
	West Chikhalakari	K. M. Waghmare	2863
Nagalwadi	East Saleghat	K. V. Chavhan	2813
	North Suwardhara	B. G. Lode	2792
	Mohgaon	Nitin Selokar	2769
Paoni	South Usripur	Priyanka Bhelave	2852
	Less Patrolling Beat Name	Name of Forest Guard	Kms.
East Pench	South Fulzari	M. P. Vanjari	2048
	Pipariya	K.D. Shrirang	2117
	Tuyapar	D. V. Gedam	2166
Paoni	Chargaon	Pradip Suryawanshi	1929
	South Patharai	A. G. Pillare	2051
	Palora	Deepak S. Rangari	2115
West Pench	Amati	D. K. Shinde	2028
	East Ghatpendhari	P. H. Pawar	1491
	West Ghatpendhari	N. K. Meshram	1755
	Surera	V. P. Dongre	2124

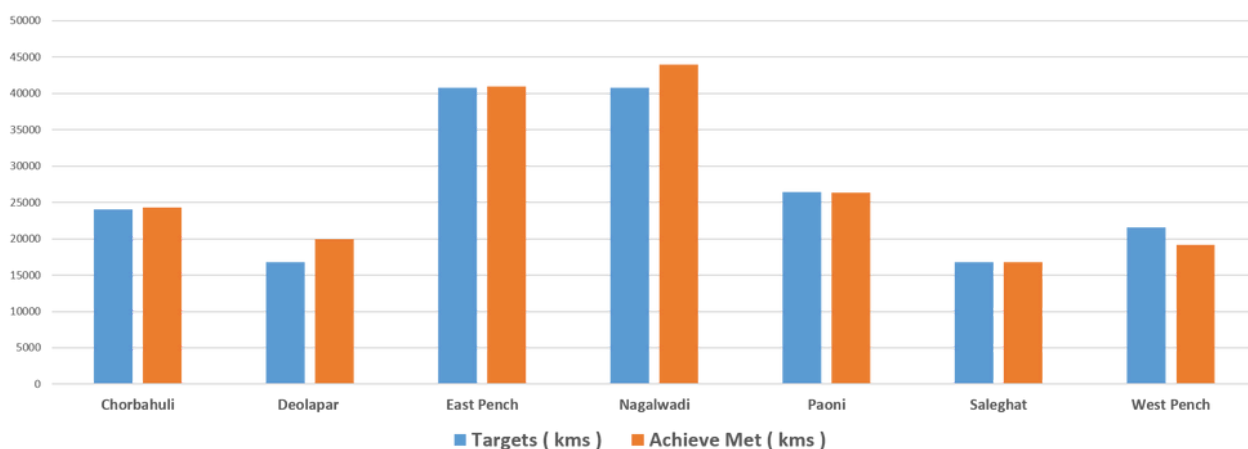
Range	Foot Patrolling	Motorcycle Patrolling	Boat Patrolling	Total Patrolling	Hectare	Total Sq. Kms. 667
Chorbahuli	24259	956	67	25282	7497.84	
Deolapar	19978	996	0	20973	5777.6	
East Pench	40920	4721	10	45651	14833.12	
Nagalwadi	43975	997	0	44972	13741.12	
Paoni	26369	3902	0	30271	6887.81	
Saleghat	16777	1175	0	17951	4984.15	
West Pench	19190	2867	251	22308	10891.02	
Total	191468	15614	328	207409	64612.75	

Range Wise Foot Patrol Efforts – 191468 kms. (April-2022 & March-2023)

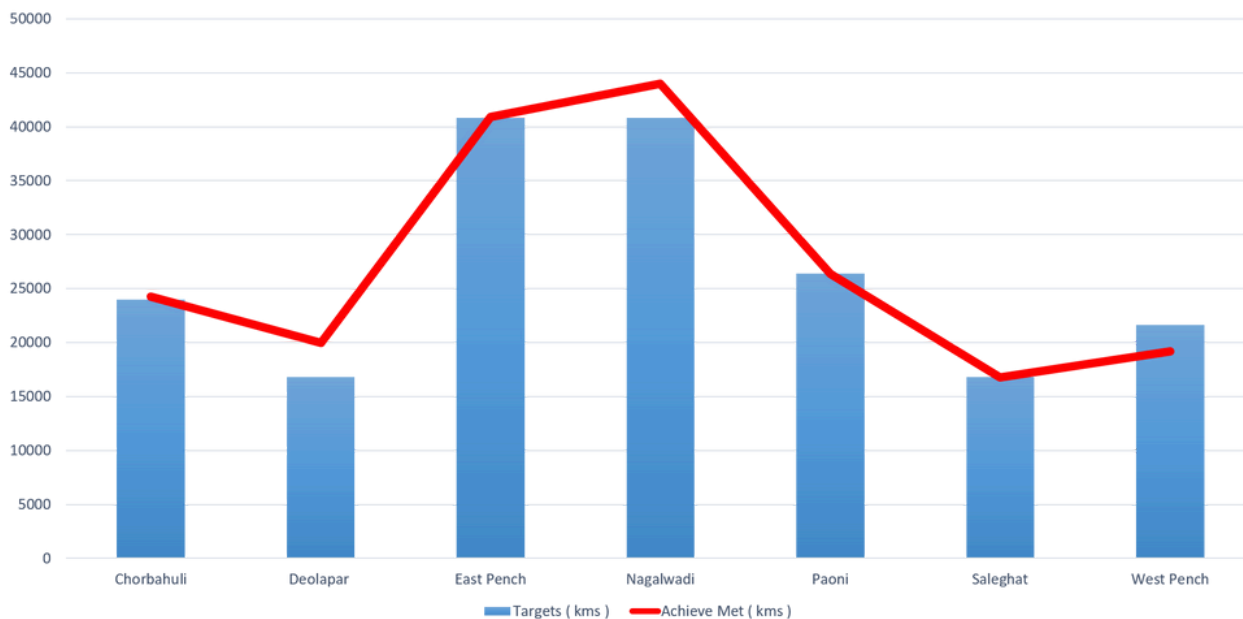


Achieve Met of 102% (April-2022 & March-2023)

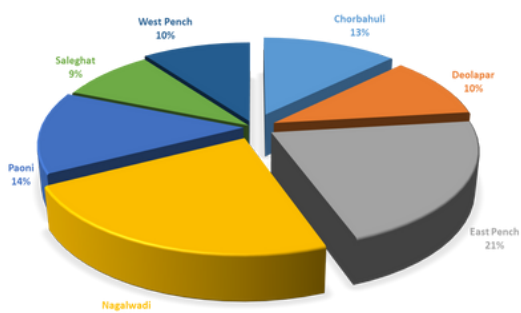
Range	Chorbahuli	Deolapar	East Pench	Nagalwadi	Paoni	Saleghat	West Pench	Total
Targets (Kms)	2400	16800	40800	40800	26400	16800	21600	187200
Achieve Met (Kms)	25259	19978	48920	43975	26369	16777	19190	1914468
Achieve Met (%)	101%	119%	100%	108%	100%	100%	89%	102%



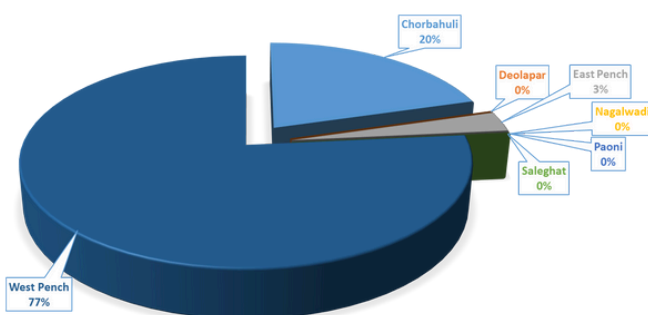
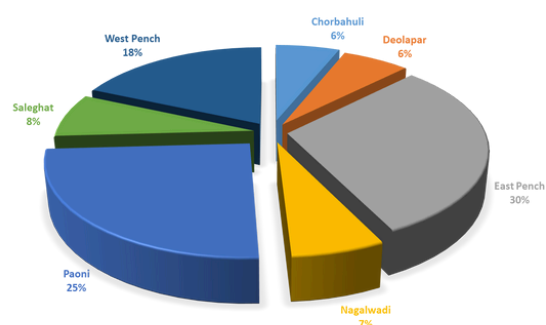
Range Wise Descending Patrol Efforts (April-2022 & March-2023)



Rangewise distribution of Foot Patrol Efforts – 191468 kms. (April-2022 & March-2023)



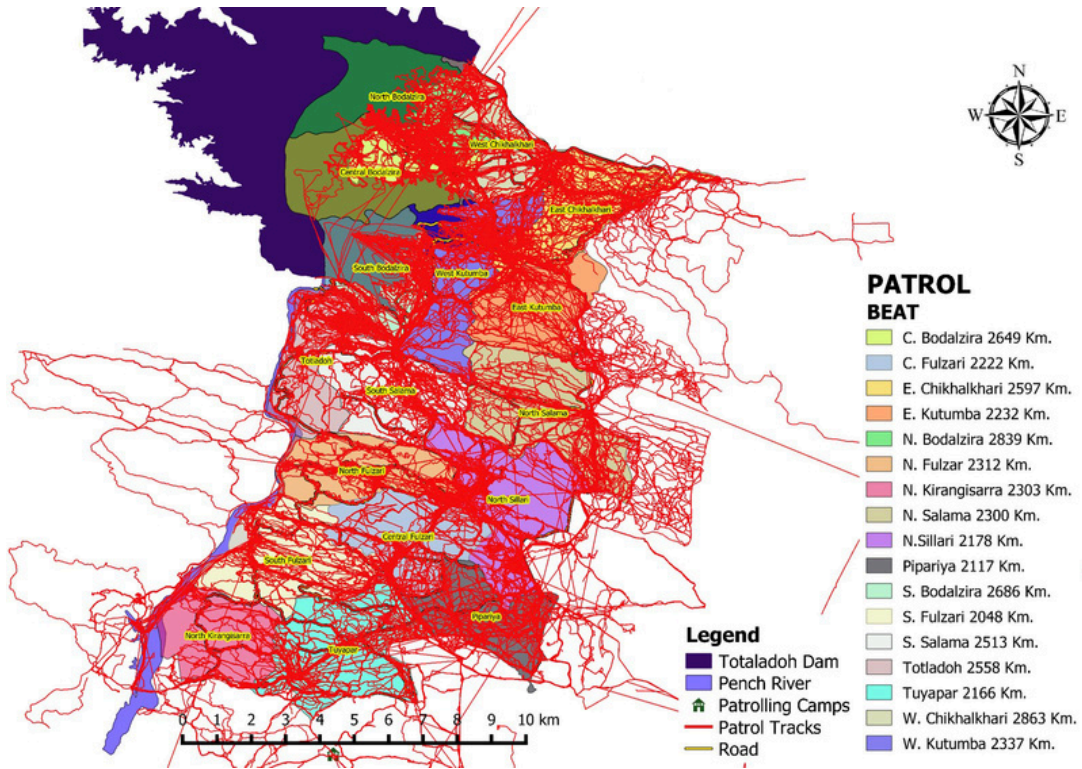
Rangewise Motorcycle Patrol Efforts – 15614 kms. (April-2022 & March-2023)



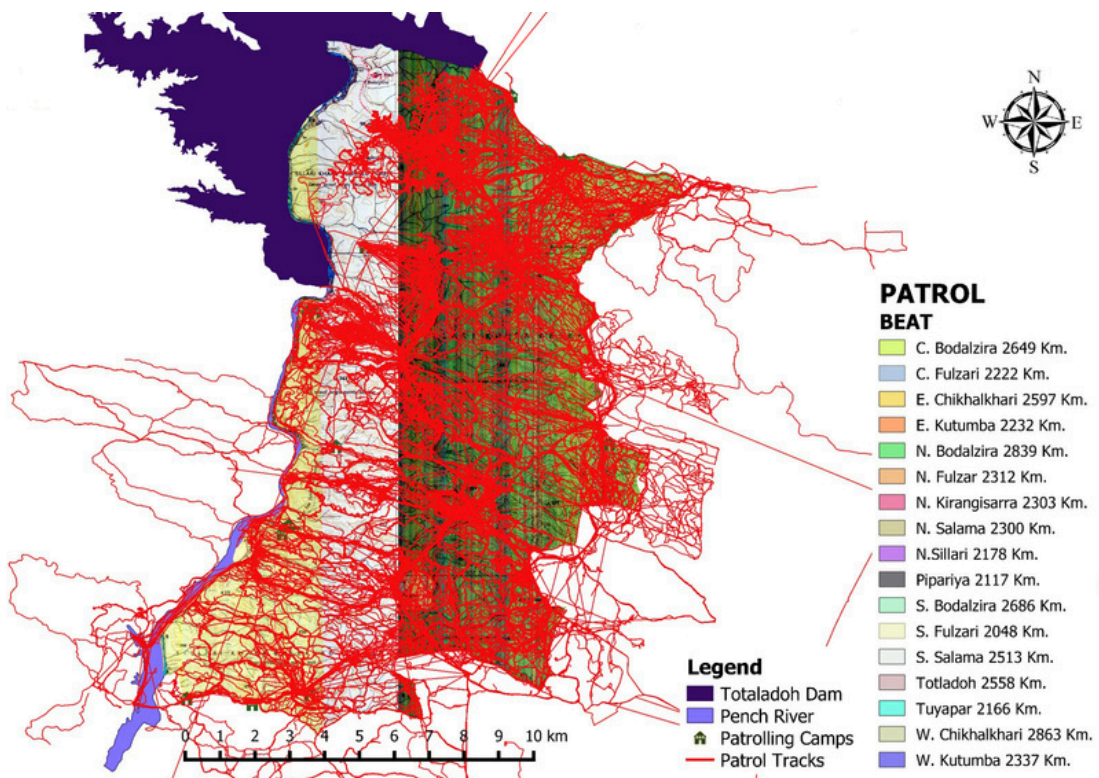
Rangewise distribution of Boat Patrol Efforts – 328 kms. (April-2022 & March-2023)



East Pench Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts – 44306 Kms.



East Pench Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts – 40920 Kms.



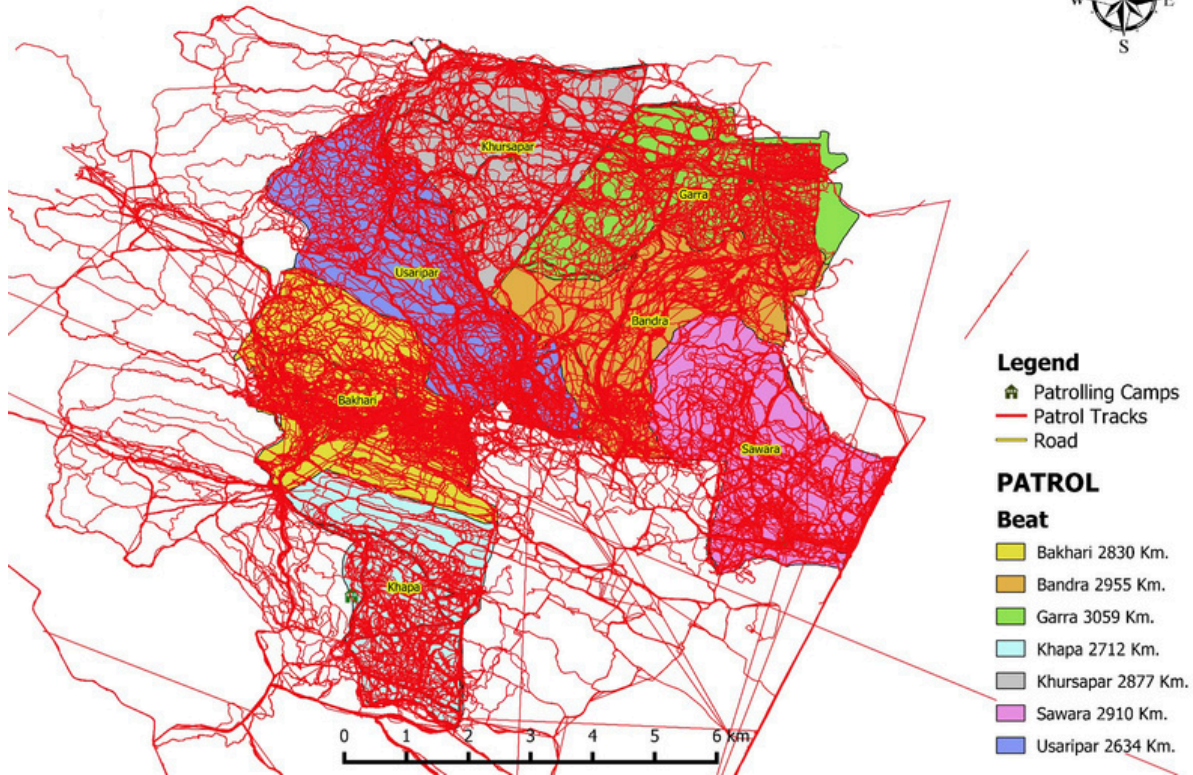
East Pench Range (April 2022 to March 2023)

Foot Patrolling

Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Central Bodalzira	171	241	241	266	226	191	254	222	234	214	209	179	2649
Central Fulzari	141	156	136	130	201	199	204	198	250	238	188	182	2222
East Chikhalkhari	215	194	167	214	209	216	232	233	270	251	182	216	2597
East Kutumba	182	178	175	196	203	200	153	188	197	234	167	158	2232
North Bodalzira	251	238	246	274	241	254	262	201	211	231	216	214	2839
North Fulzari	160	228	221	168	206	239	200	162	197	218	152	161	2312
N. Kirrangisara	201	197	197	177	204	271	148	162	206	210	157	172	2303
N. Salama	201	220	151	138	189	222	218	169	230	212	177	174	2300
N. Sillari	185	146	147	151	187	205	173	202	217	230	175	159	2178
Pipariya	185	174	164	156	195	185	186	125	194	212	179	163	2117
S. Bodalzira	123	238	289	265	236	184	228	180	313	263	187	181	2686
S. Fulzari	107	92	154	153	195	203	184	192	210	217	174	168	2048
S. Salama	184	218	233	254	241	246	210	176	222	228	157	143	2513
Totaladoh	170	222	199	183	195	251	288	226	244	237	171	171	2558
Tuyapar	198	148	159	152	204	259	129	122	235	241	165	154	2166
W. Chikhalkhari	241	228	239	231	214	284	239	264	272	217	219	216	2863
W. Kutumba	170	211	227	185	193	209	186	191	204	226	175	160	2337
Total	3085	3329	3345	3293	3539	3818	3494	3213	3906	3879	3050	2971	40920



Chorbahuli Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 24259 Kms.



Chorbahuli Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 24259Kms.



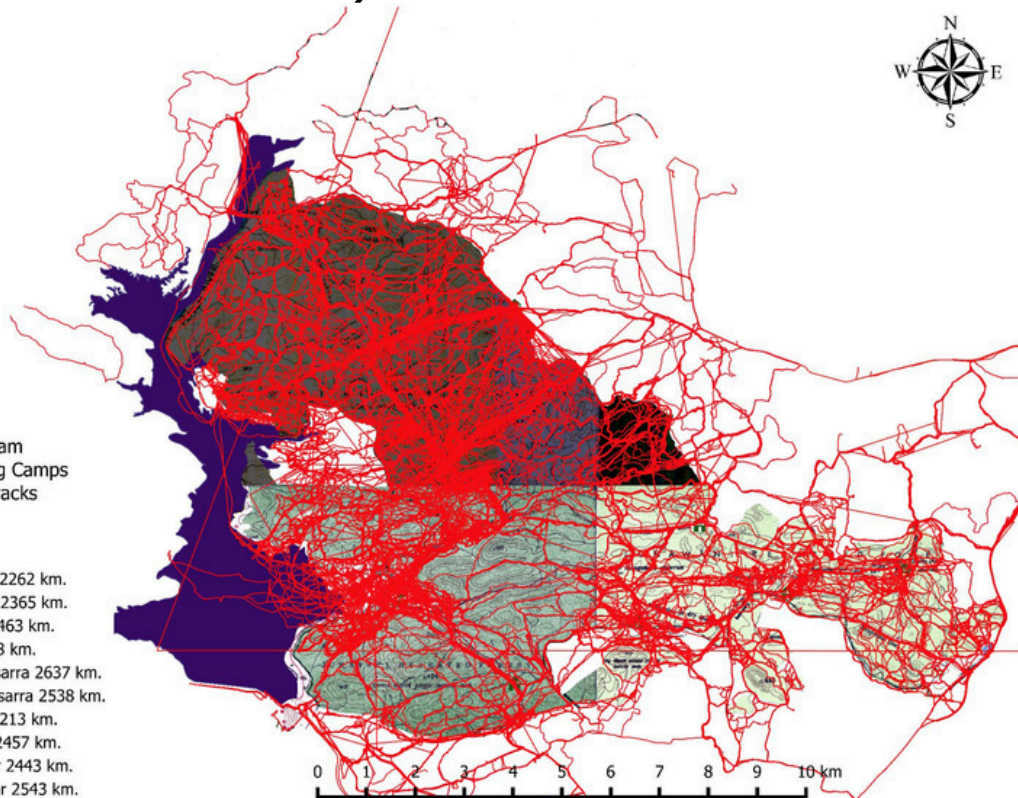
Legend

- Pench Dam
- Patrolling Camps
- Patrol Tracks

PATROL

BEAT

- | | |
|----------------|----------|
| Ambazari | 2262 km. |
| Chorbauli | 2365 km. |
| Dahoda | 2463 km. |
| Deoli | 2338 km. |
| N.Kirangisarra | 2637 km. |
| W.Kirangisarra | 2538 km. |
| Sarakha | 2213 km. |
| Satrapur | 2457 km. |
| E.Tuyapar | 2443 km. |
| W.Tuyapar | 2543 km. |



Chorbahuli Range (April 2022 to March 2023)

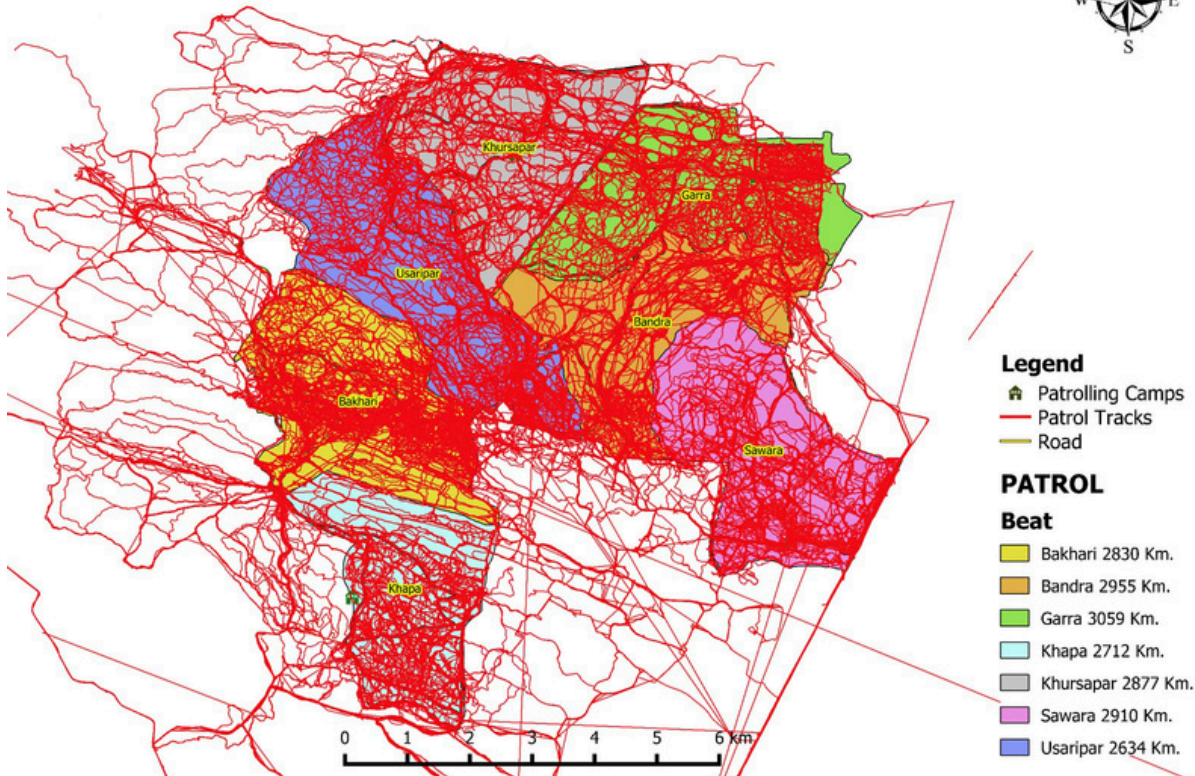
Foot Patrolling

Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Ambazari	160	233	184	197	204	205	191	124	199	188	186	201	2262
Chorbahuli	130	152	218	210	208	209	193	196	210	203	209	227	2365
Dahoda	212	212	201	210	215	213	207	208	198	199	168	220	2463
Devali	199	165	152	216	209	205	196	183	199	219	196	198	2338
East Tuyapar	198	201	190	169	207	206	245	209	213	195	188	220	2443
North Kirrangisarra	216	240	216	226	236	241	210	204	210	219	206	212	2637
Sarakha	132	64	175	210	216	217	209	202	211	234	136	207	2213
Satrapur	175	204	184	238	208	208	177	182	218	222	220	220	2457
West Kirrangisarra	221	211	209	211	205	226	216	202	219	176	219	223	2538
West Tuyapar	195	208	176	210	203	209	224	213	206	283	194	222	2543
Total	1838	1890	1905	2097	2111	2139	2068	1923	2083	2138	1922	2150	24259

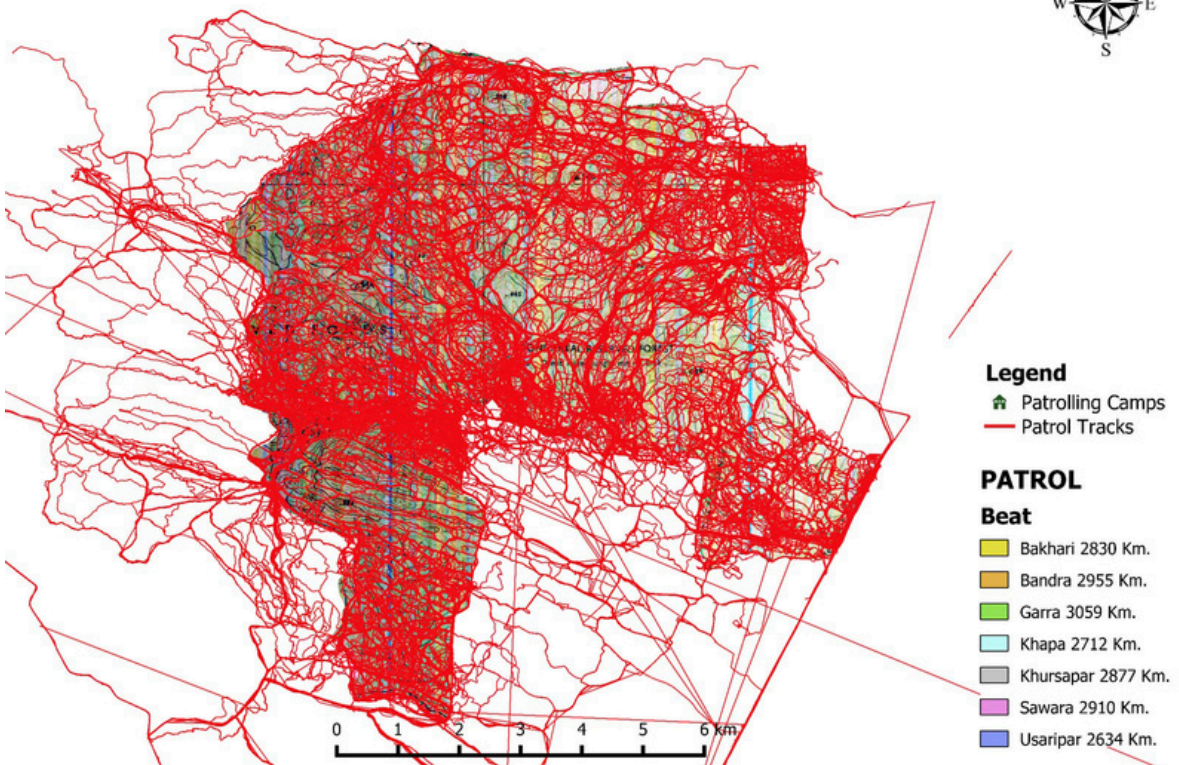




Deolapar Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 19978 Kms.



Chorbahuli Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 19978 Kms.



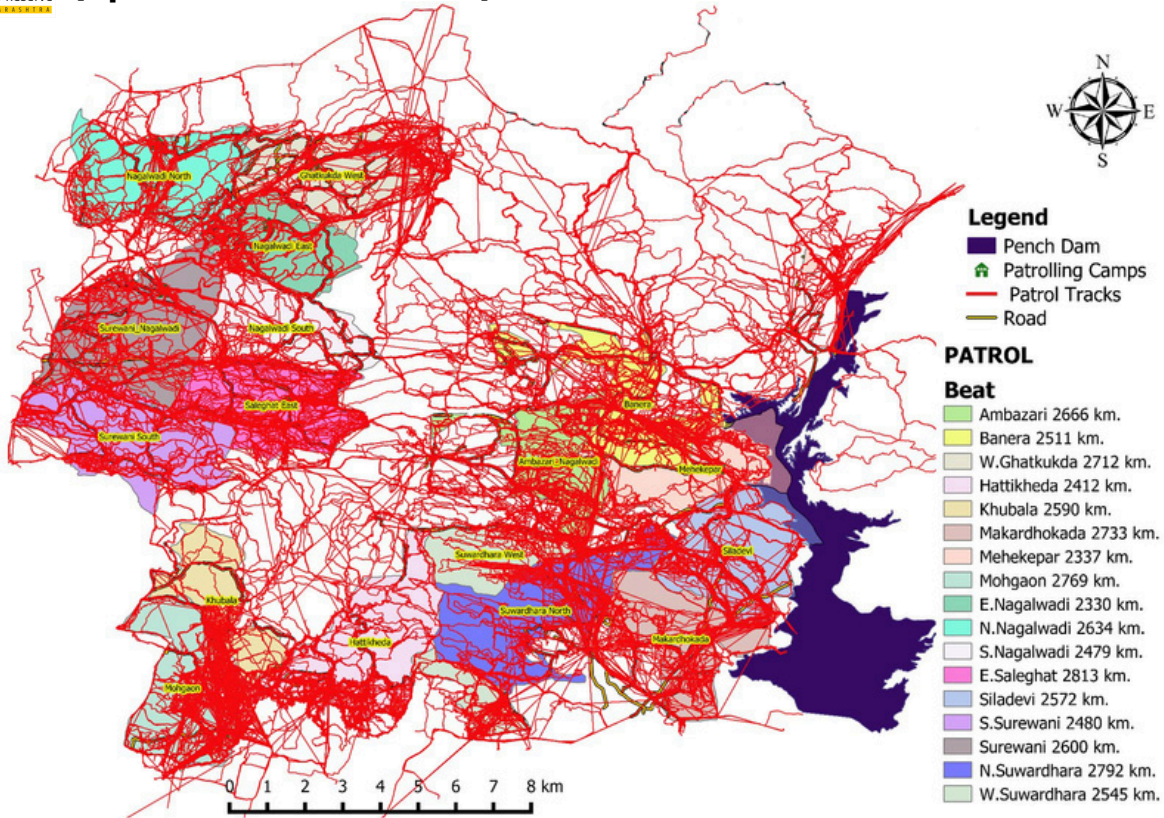
Deolapar Range (April 2022 to March 2023)

Foot Patrolling

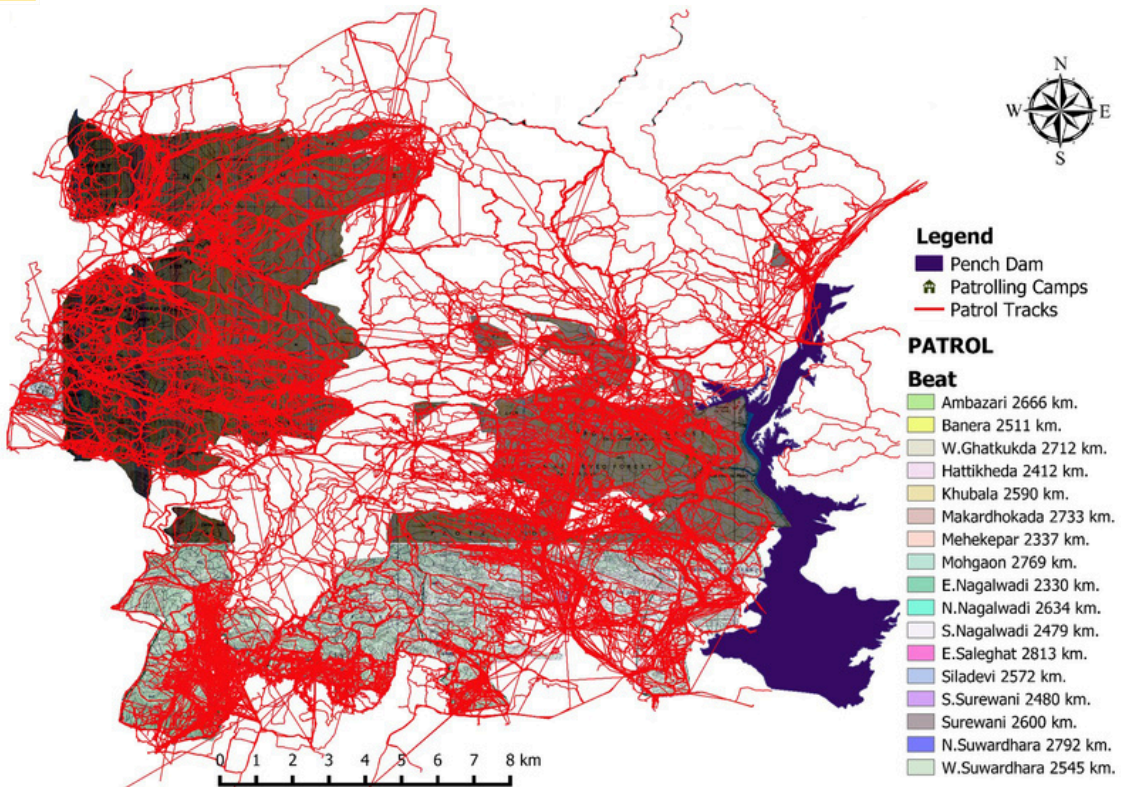
Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Bakhari	245	242	248	235	224	213	245	232	247	227	221	250	2830
Bandra	221	215	240	248	236	243	243	261	261	269	245	272	2955
Garra	239	231	259	252	245	289	227	233	240	284	314	246	3059
Khapa	224	240	231	225	218	222	219	225	219	221	228	241	2712
Khursapar	247	248	253	261	219	221	215	241	227	239	241	265	2877
Sawara	243	263	243	259	239	250	207	204	233	246	266	258	2910
Usripar	231	234	193	203	209	208	204	209	259	216	213	256	2634
Total	1650	1673	1667	1683	1590	1646	1560	1605	1686	1702	1728	1788	19977



Nagalwadi Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 43975 Kms.



Nagalwadi Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 43975 Kms.



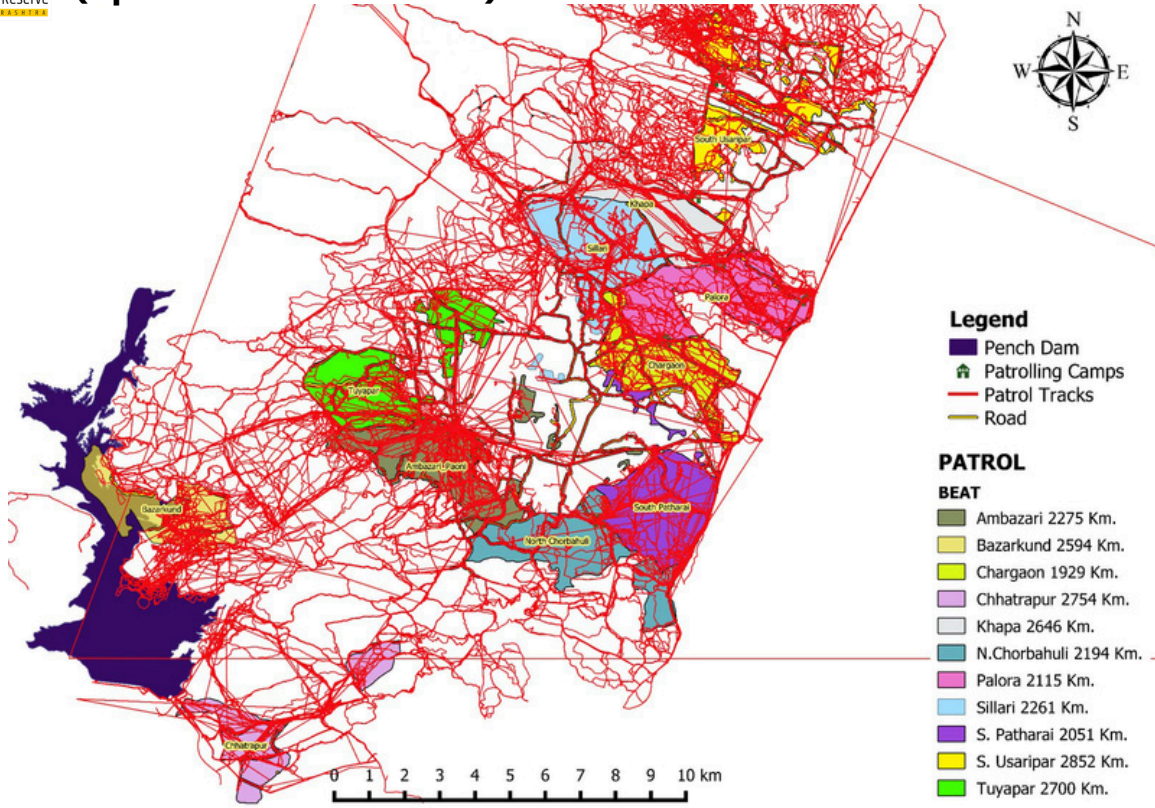
Nagalwadi Range (April 2022 to March 2023)

Foot Patrolling													
Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Ambazari	210	211	215	209	214	197	221	276	269	211	214	220	2666
Banera	281	359	209	216	206	198	160	205	176	205	153	143	2511
East Nagalwadi	203	202	117	198	201	205	142	197	217	217	216	215	2330
East Saleghat	219	226	241	235	224	216	262	231	252	227	229	251	2813
Hetikheda	174	185	175	201	206	221	192	192	219	212	218	217	2412
Khubala	197	195	207	212	208	243	212	211	237	229	219	221	2590
Mehkepar	209	173	198	205	211	205	177	218	179	196	198	167	2337
Makardhokda	234	217	199	218	241	282	224	222	221	213	234	228	2733
Mohgaon	214	241	208	185	204	247	252	284	238	229	217	250	2769
North Nagalwadi	219	186	195	207	195	185	261	225	249	240	234	237	2634
North Suwardhara	168	255	211	216	209	197	239	291	295	209	225	278	2792
Shiladevi	235	195	177	207	224	201	201	328	189	212	162	241	2572
South Nagalwadi	72	148	239	226	221	203	215	209	219	271	235	222	2478
South Suwardhara	212	186	205	211	215	204	147	214	231	230	218	206	2480
Surewani	213	223	230	201	201	223	226	207	223	230	202	220	2600
West Ghatkukda	225	207	219	210	213	237	232	223	223	236	242	244	2712
West Suwardhara	177	210	192	207	209	228	238	220	205	218	223	216	2545
Total	3462	3619	3437	3564	3602	3692	3601	3953	3842	3785	3639	3776	43975

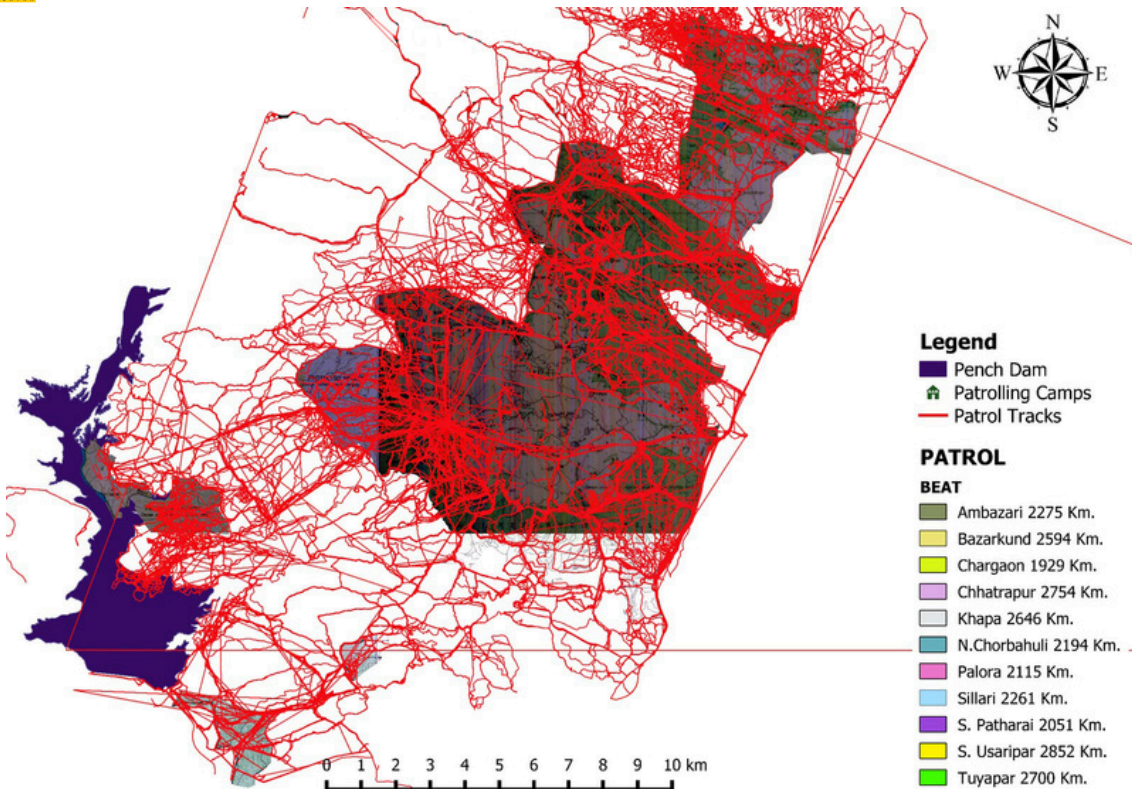




Paoni Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 26369 Kms.



Paoni Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 26369 Kms.



Paoni Range (April 2022 to March 2023)

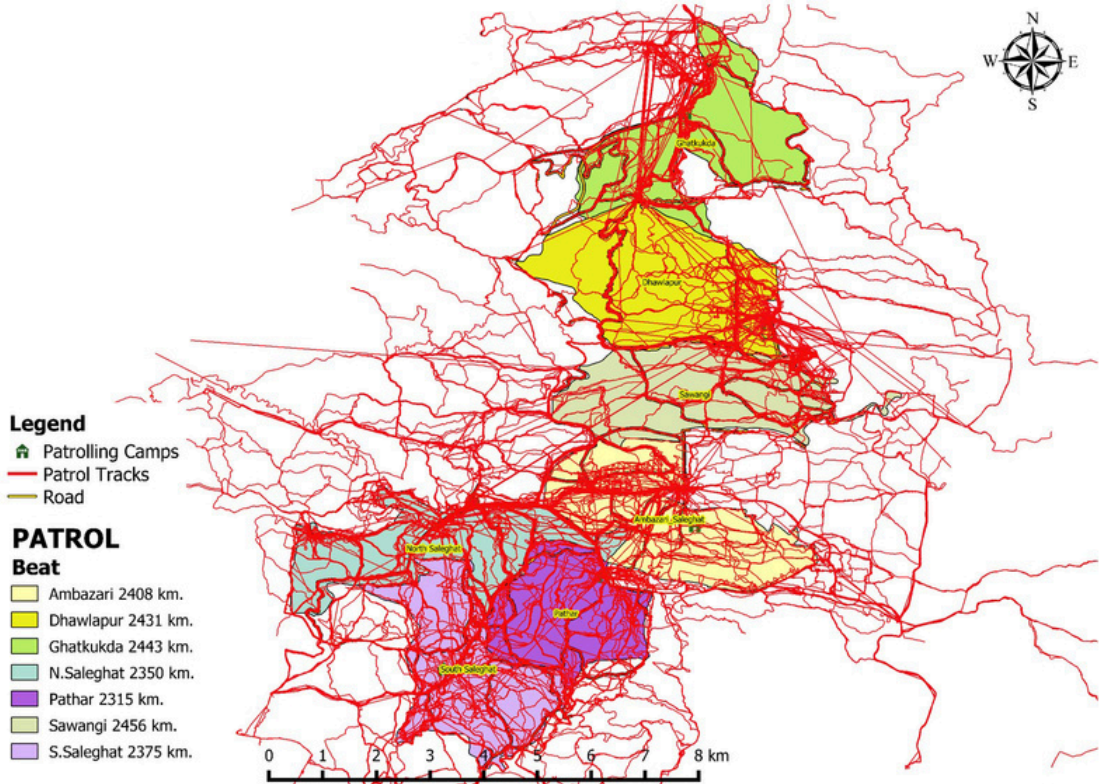
Foot Patrolling

Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Ambazari	105	78	110	185	203	234	216	224	230	220	235	234	2275
Bajarkund	212	213	209	215	209	224	230	177	237	230	206	231	2594
Chargaon	29	29	23	159	189	209	208	205	214	226	204	234	1929
Khapa	219	223	221	219	209	235	215	218	224	217	221	224	2646
North Chorbahuli	134	91	96	176	192	214	227	193	218	219	223	212	2194
Palora	89	140	114	195	180	251	180	205	201	200	187	172	2115
Satrapur	244	224	227	206	213	268	232	227	217	221	235	238	2754
Sillari	48	86	171	204	196	203	240	232	236	191	213	242	2261
South Patharai	94	47	138	169	175	212	209	170	199	204	176	257	2051
South Usripur	236	181	234	229	224	258	255	156	286	267	259	266	2852
Tuyapar	191	177	251	235	229	239	228	212	202	215	247	274	2700
Total	1601	1489	1794	2192	2219	2547	2440	2219	2464	2410	2406	2584	26369

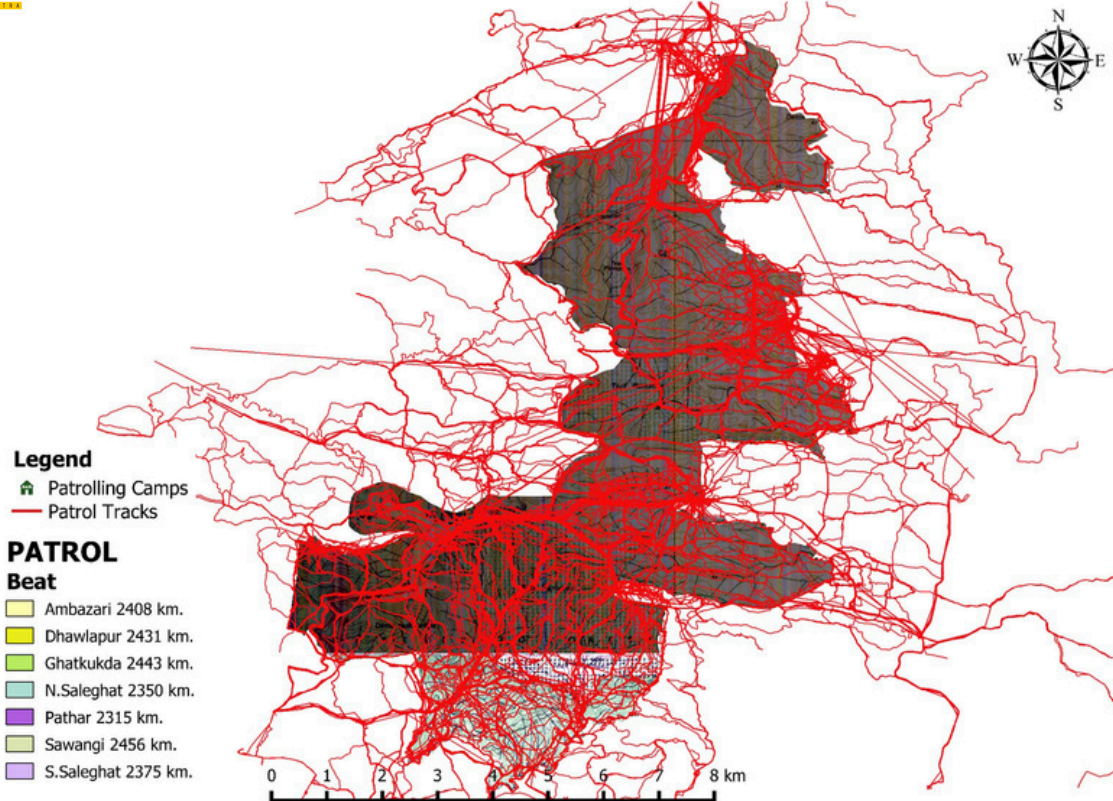




Saleghat Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 16777 Kms.



Saleghat Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 16777 Kms.



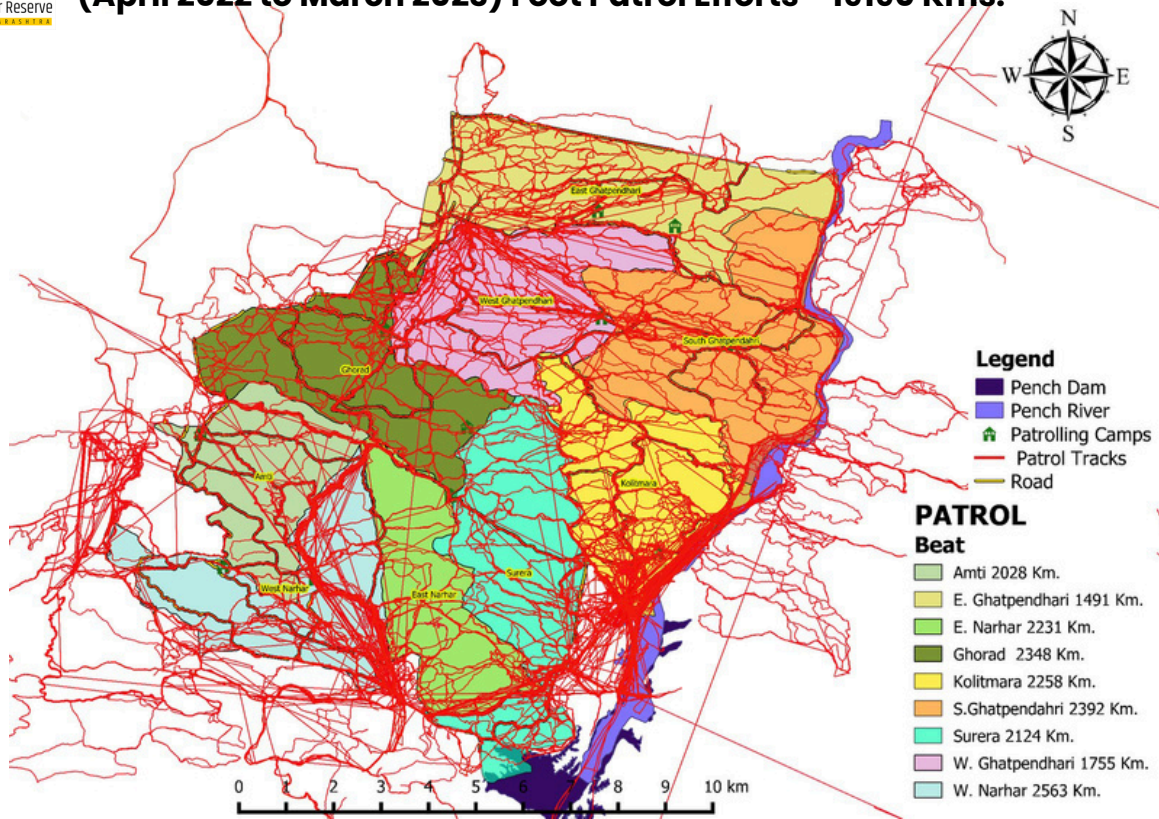
Saleghat Range (April 2022 to March 2023)

Foot Patrolling

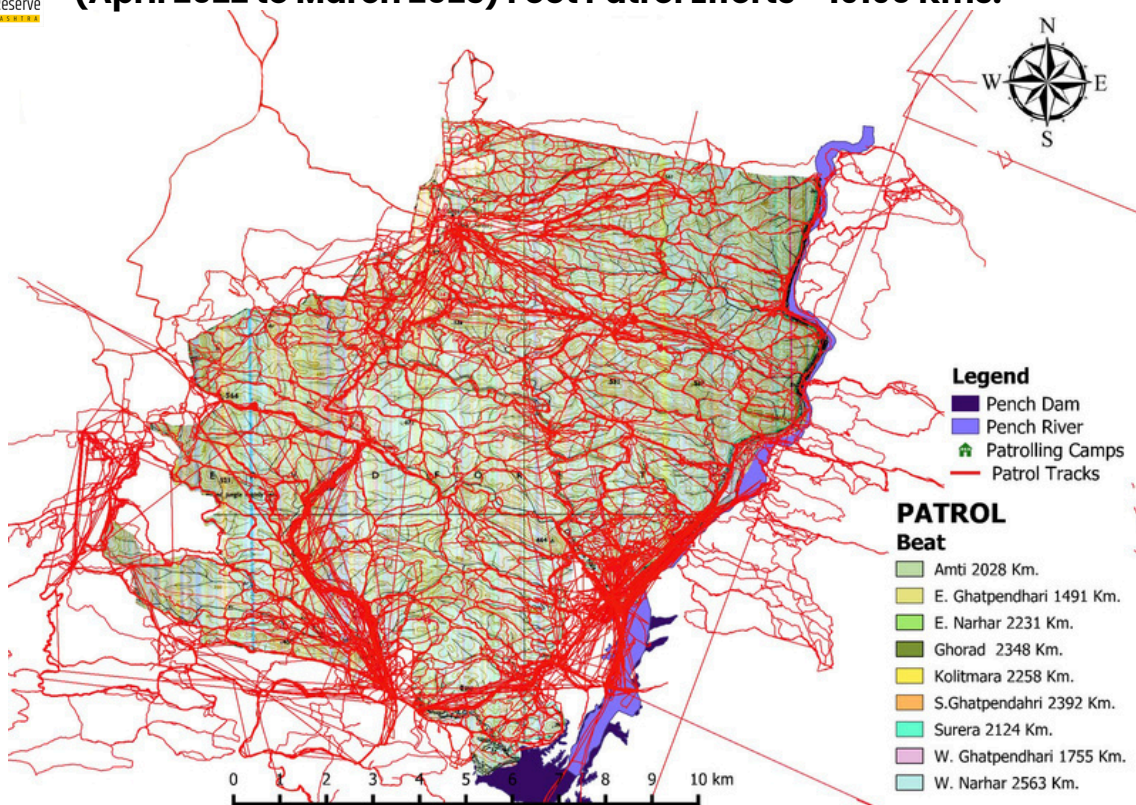
Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Ambazari	143	136	203	209	204	210	189	205	245	228	213	223	2408
Dhawalapur	242	158	158	178	198	211	201	199	260	210	214	201	2431
Ghatkukada	219	228	216	209	211	213	185	167	206	197	169	223	2443
North Saleghat	136	148	224	220	209	216	175	192	202	213	207	208	2350
Pathar	120	157	154	195	203	209	198	187	204	235	233	219	2315
Sawangi	192	213	206	214	219	213	204	179	213	185	207	211	2456
South Saleghat	180	193	180	195	189	226	209	198	188	204	201	213	2375
Total	1232	1233	1341	1420	1433	1498	1361	1327	1518	1472	1443	1498	16777



Wast Pench Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 19190 Kms.



Wast pench Range, Pench Tiger Reserve, MH. (April 2022 to March 2023) Foot Patrol Efforts - 19190 Kms.



Wast Pench Range (April 2022 to March 2023)

Foot Patrolling

Beat	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Total
Amati	135	66	123	155	185	232	187	138	192	201	192	222	2028
East Ghatpendhari	0	0	0	0	80	148	208	141	201	206	242	266	1491
East Narhar	97	69	158	175	201	181	242	178	207	215	238	270	2231
Ghorad	195	191	201	0	213	219	225	187	225	208	232	253	2348
Kolitmara	163	121	76	112	158	170	245	190	208	207	273	335	2258
South Ghatpendhari	152	132	164	189	199	210	206	221	213	219	238	248	2392
Surera	32	75	90	96	165	214	241	203	237	218	303	251	2124
West Ghatpendhari	0	71	138	0	0	206	209	203	204	234	239	251	1755
West Narhar	267	223	187	219	193	179	201	207	228	206	231	223	2563
Total	1041	948	1137	946	1394	1759	1964	1668	1915	1914	2188	2319	19190



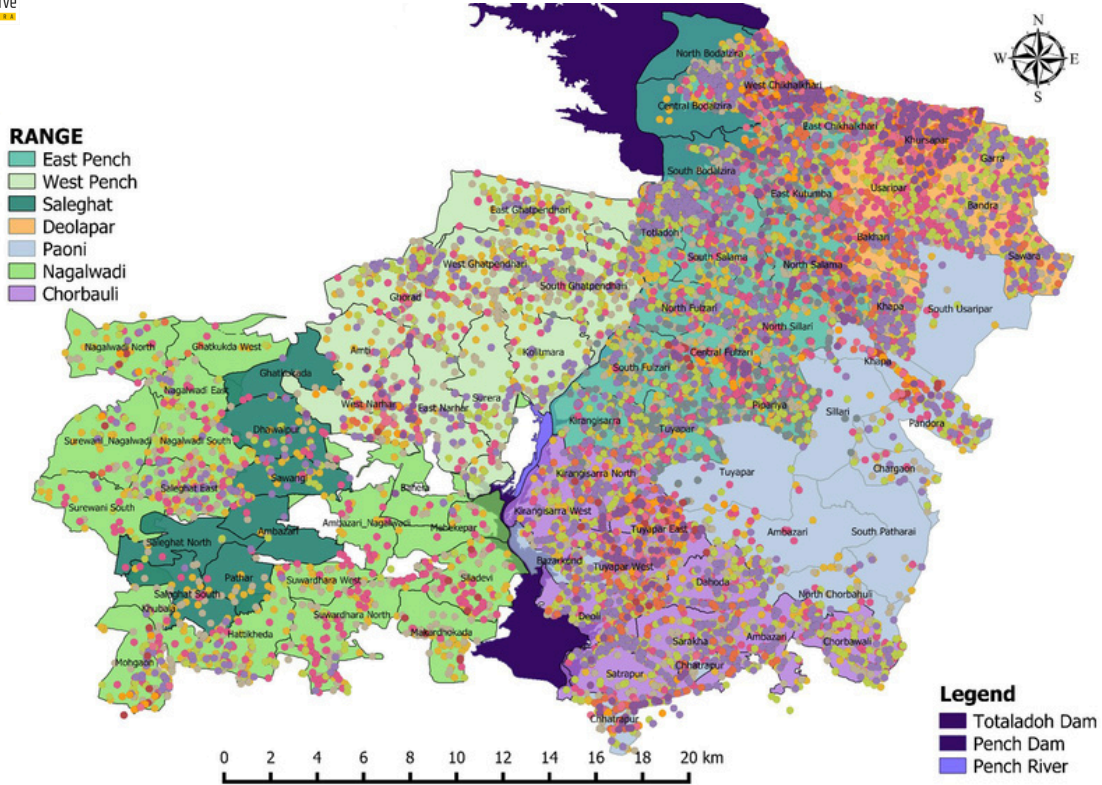


Animals Map

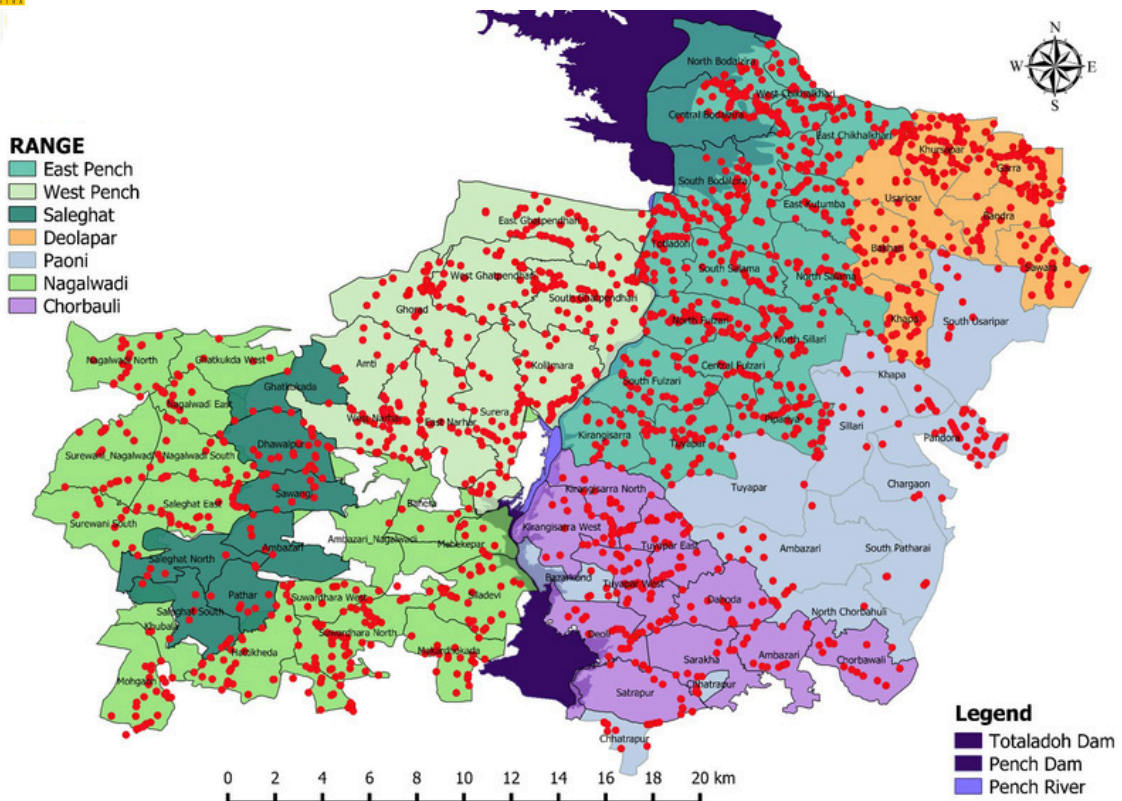
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Pench Tiger Reserve, MH. All Animal Records (April 2022 to March 2023)

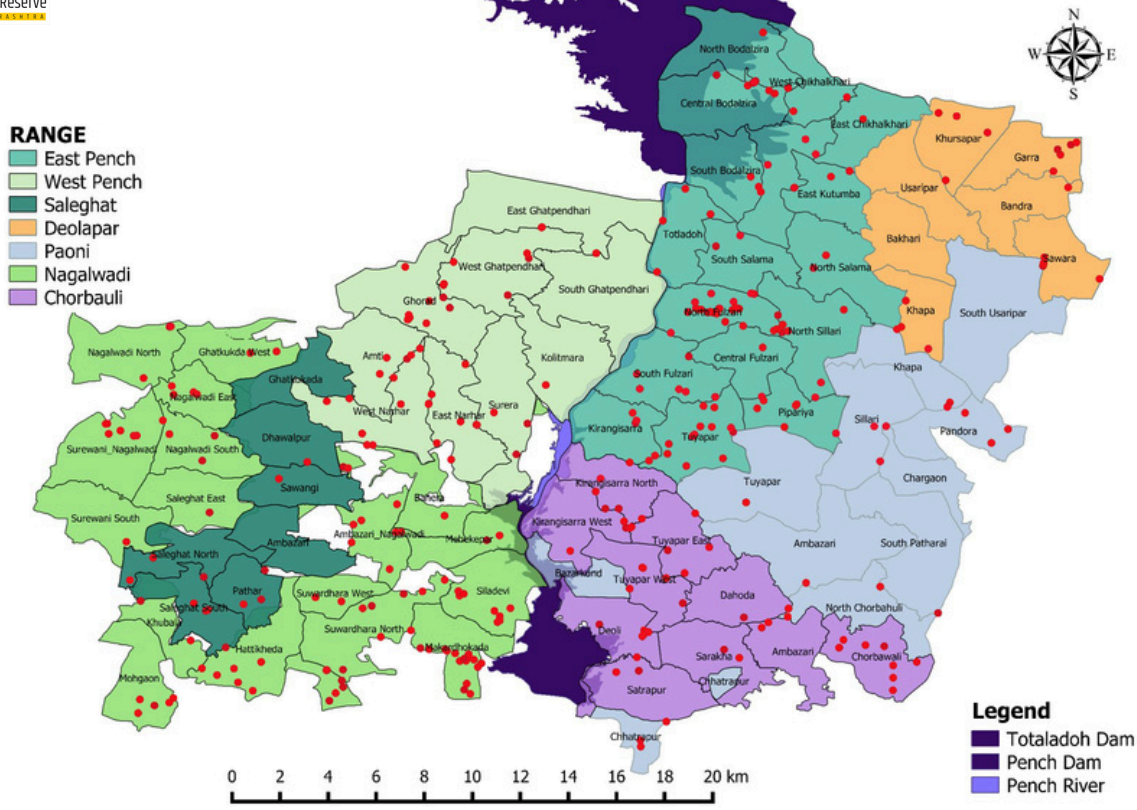


Pench Tiger Reserve, MH. Tiger Animal Records (April 2022 to March 2023)

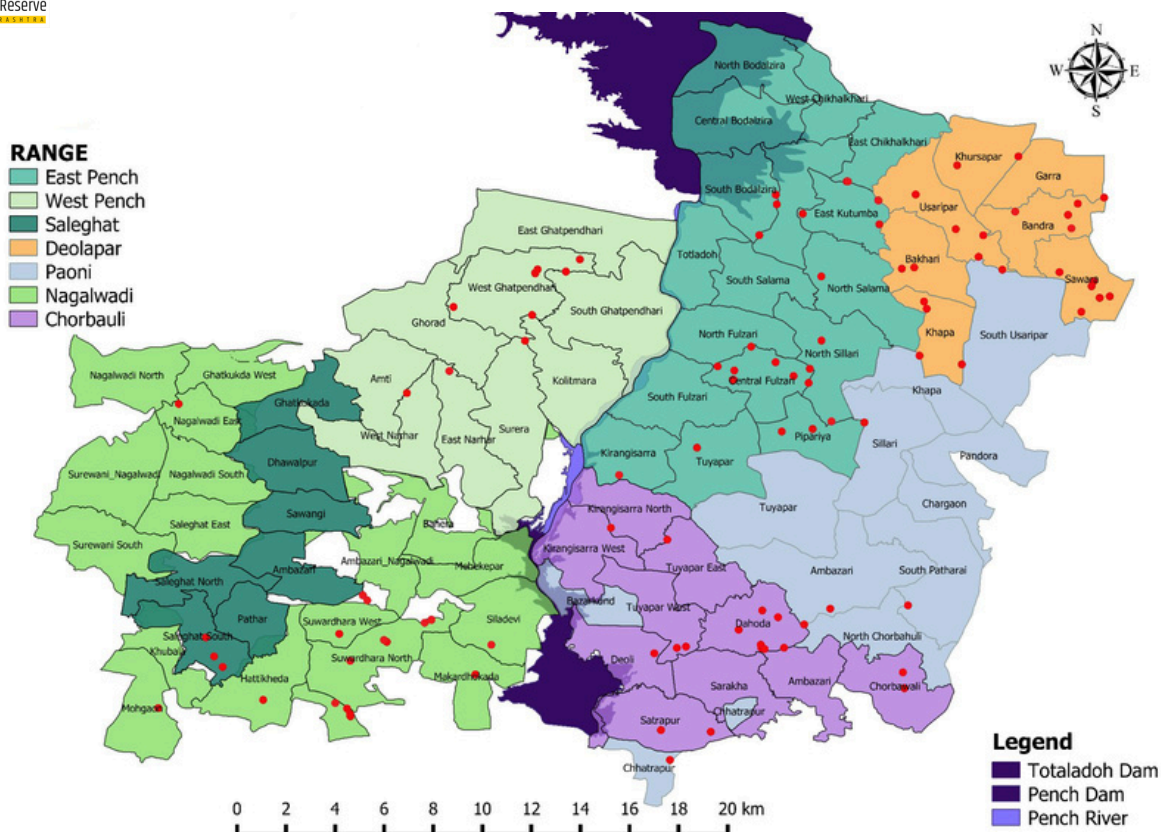




Pench Tiger Reserve, MH. Leopard Animal Records (April 2022 to March 2023)

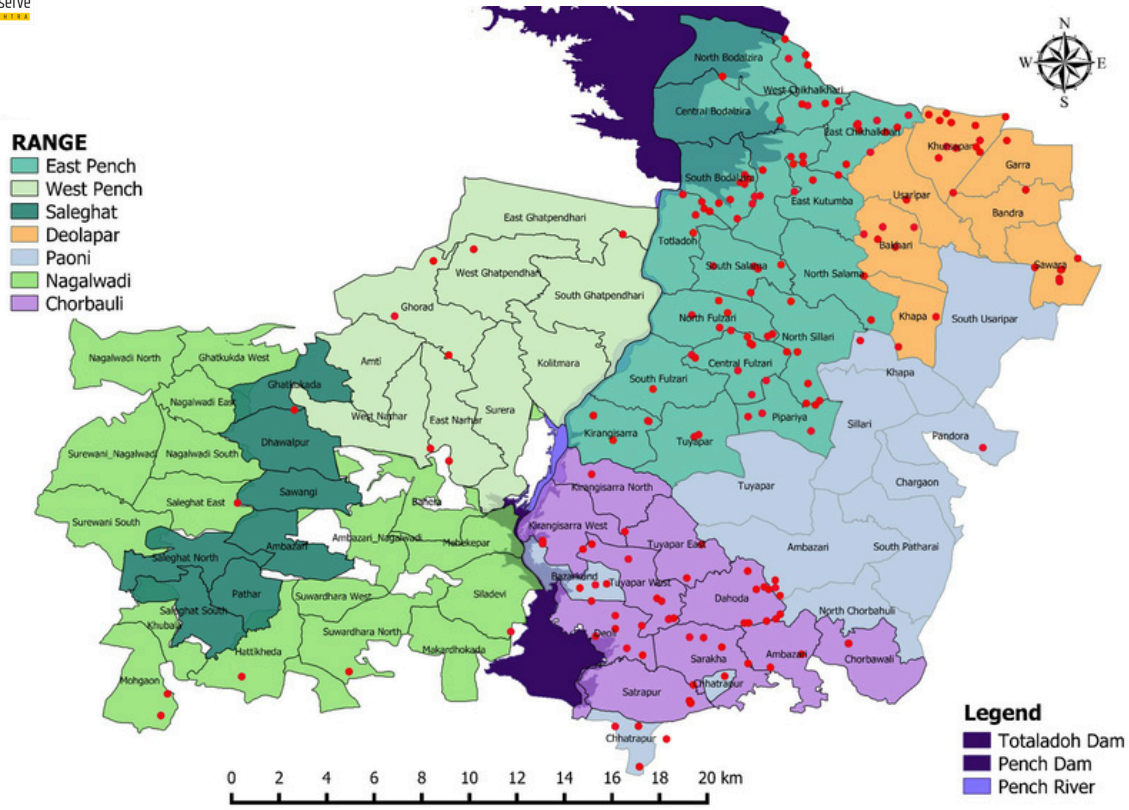


Pench Tiger Reserve, MH. Sloth Bear Animal Records (April 2022 to March 2023)

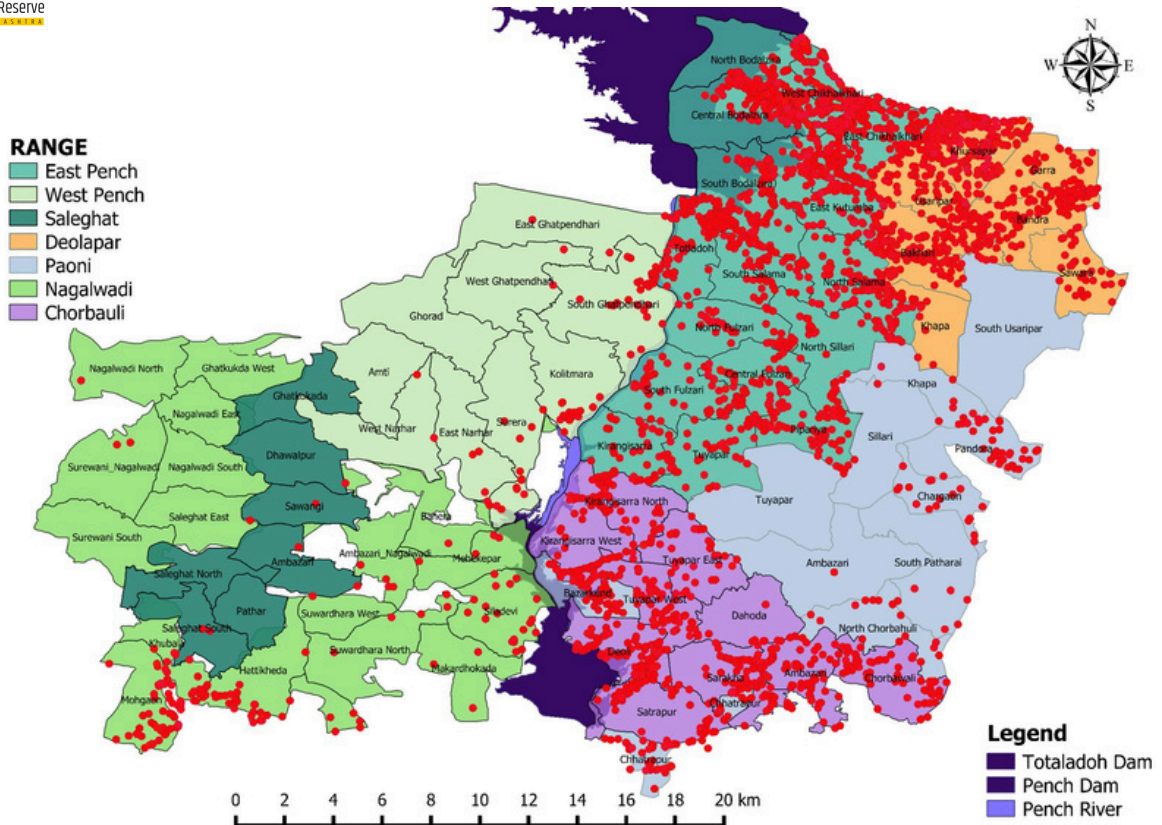




Pench Tiger Reserve, MH. Wild Dog Animal Records (April 2022 to March 2023)

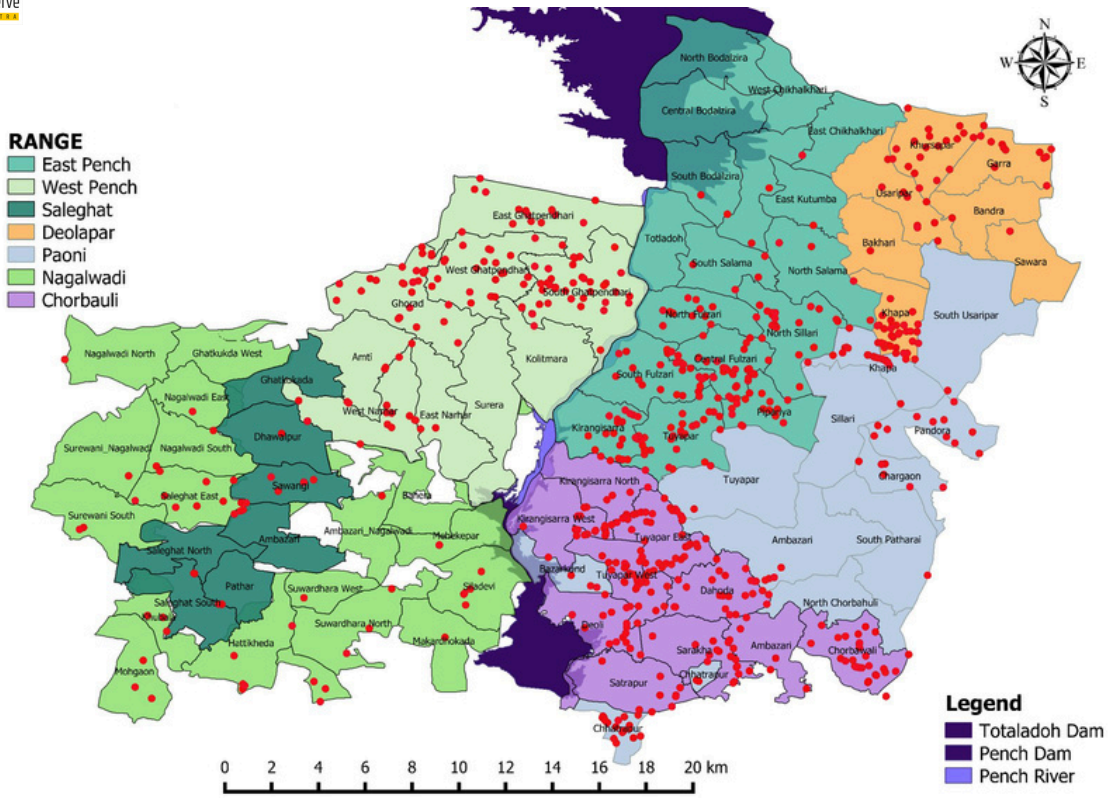


Pench Tiger Reserve, MH. Chital Animal Records (April 2022 to March 2023)

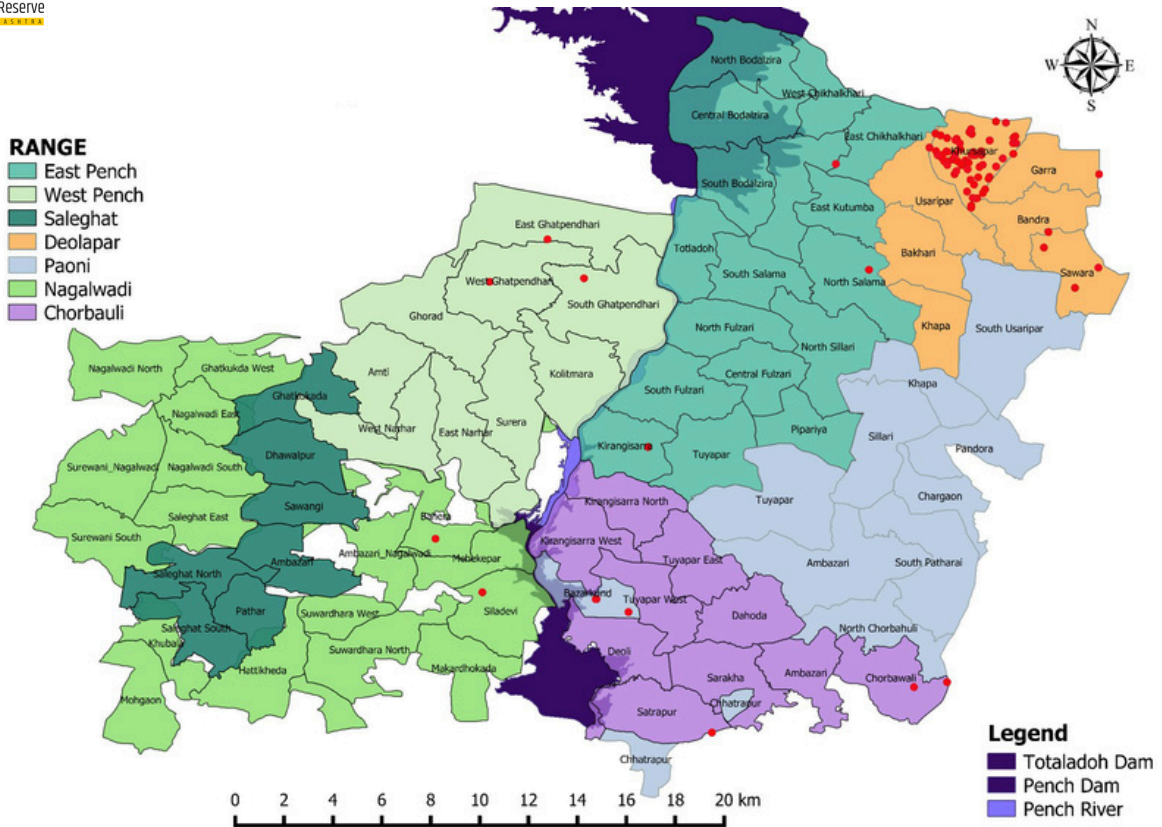




Pench Tiger Reserve, MH. Barking Deer Animal Records (April 2022 to March 2023)

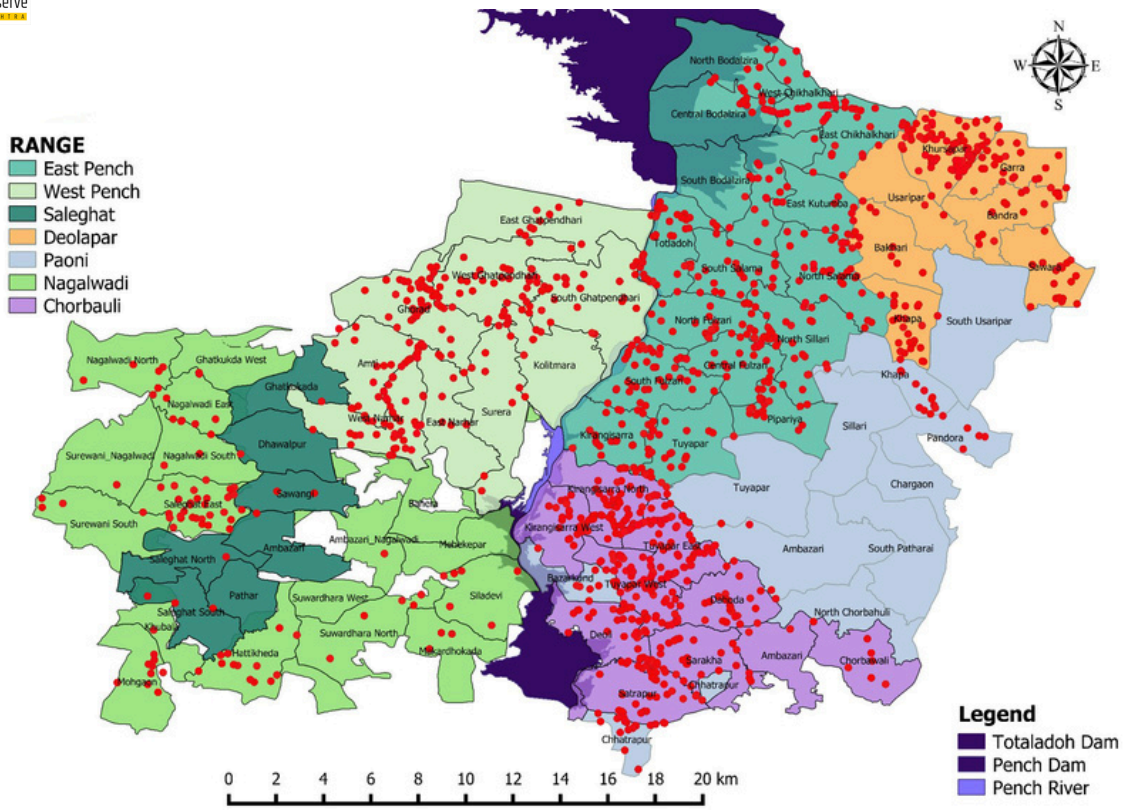


Pench Tiger Reserve, MH. Chowsingha Animal Records (April 2022 to March 2023)

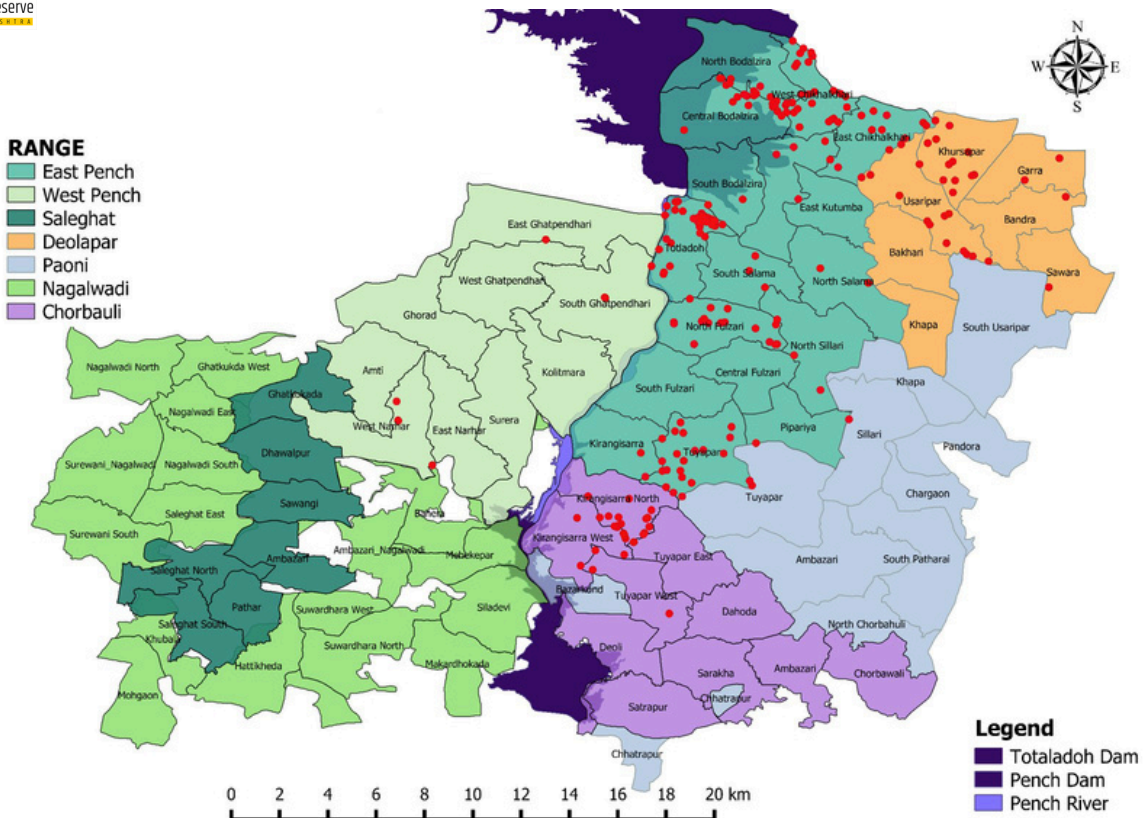




Pench Tiger Reserve, MH. Gaur Animal Records (April 2022 to March 2023)

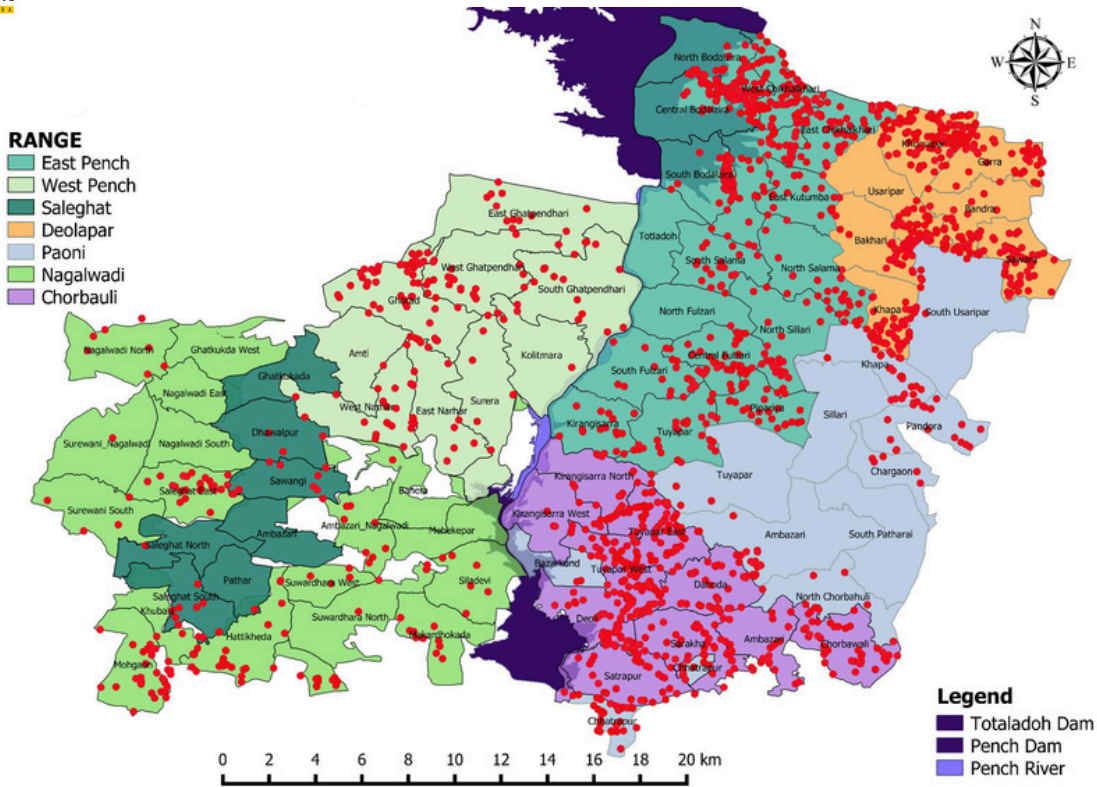


Pench Tiger Reserve, MH. Hanuman Langur Animal Records (April 2022 to March 2023)

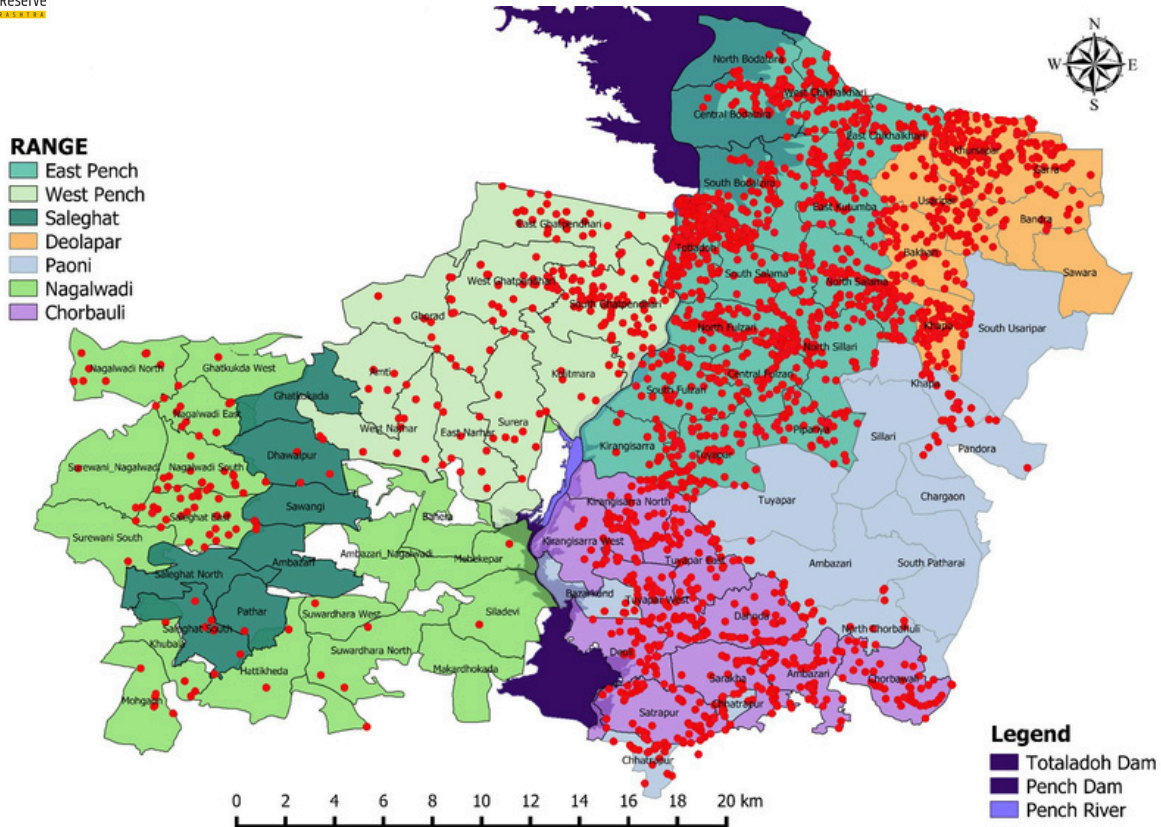




Pench Tiger Reserve, MH. Nilgai Animal Records (April 2022 to March 2023)



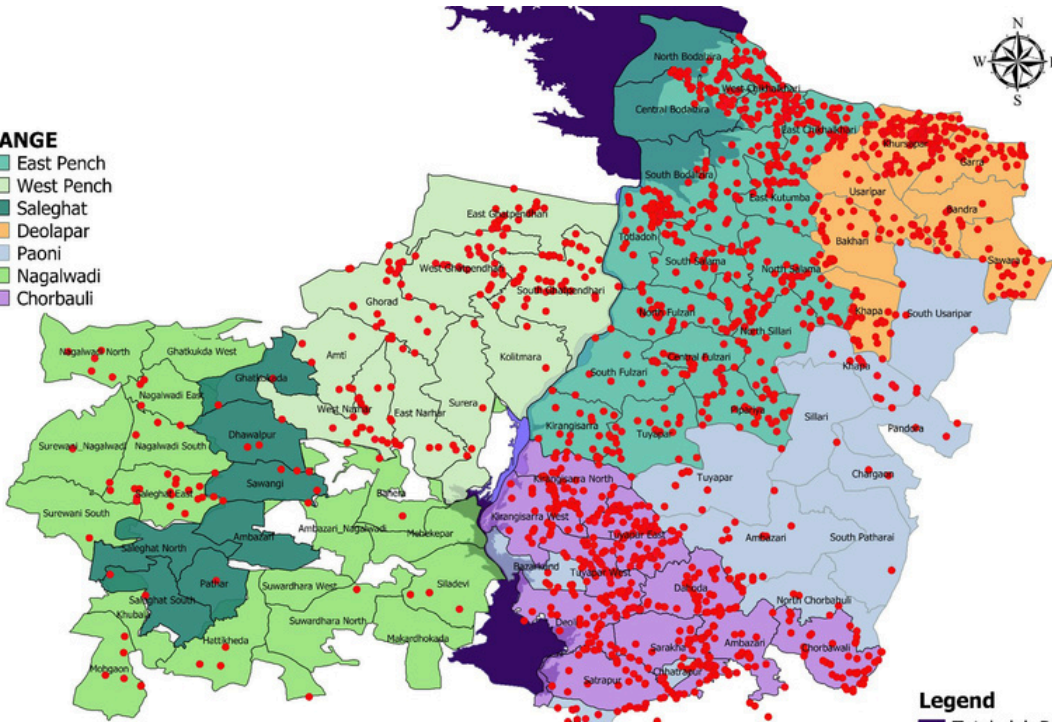
Pench Tiger Reserve, MH. Sambar Animal Records (April 2022 to March 2023)





Pench Tiger Reserve, MH. Wild Pig Animal Records (April 2022 to March 2023)

- RANGE**
- East Pench
 - West Pench
 - Saleghat
 - Deolapar
 - Paoni
 - Nagalwadi
 - Chorbauli

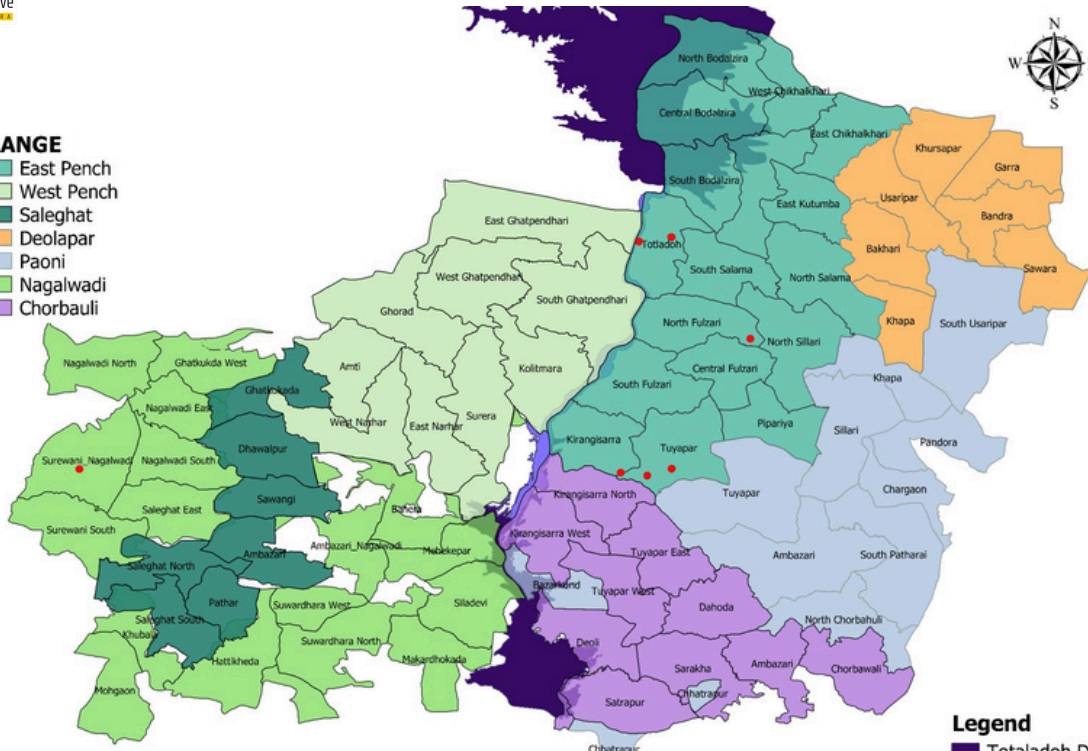


- Legend**
- Totaladoh Dam
 - Pench Dam
 - Pench River



Pench Tiger Reserve, MH. Hornbill Animal Records (April 2022 to March 2023)

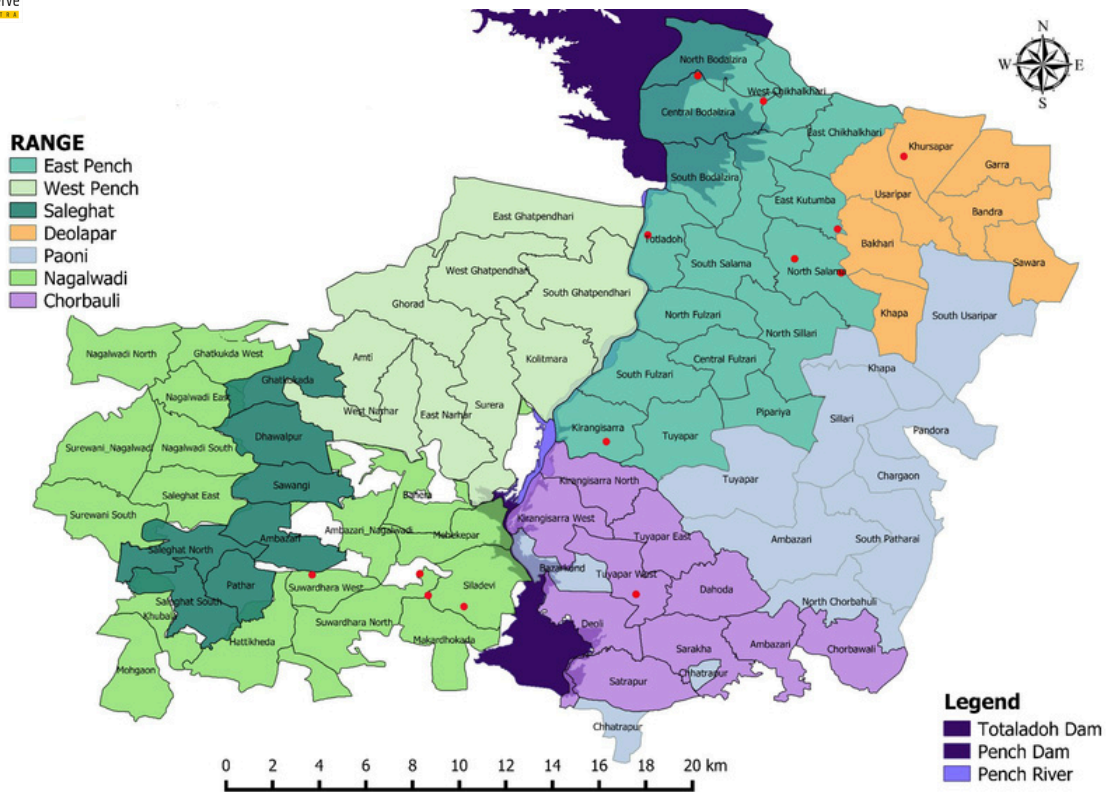
- RANGE**
- East Pench
 - West Pench
 - Saleghat
 - Deolapar
 - Paoni
 - Nagalwadi
 - Chorbauli



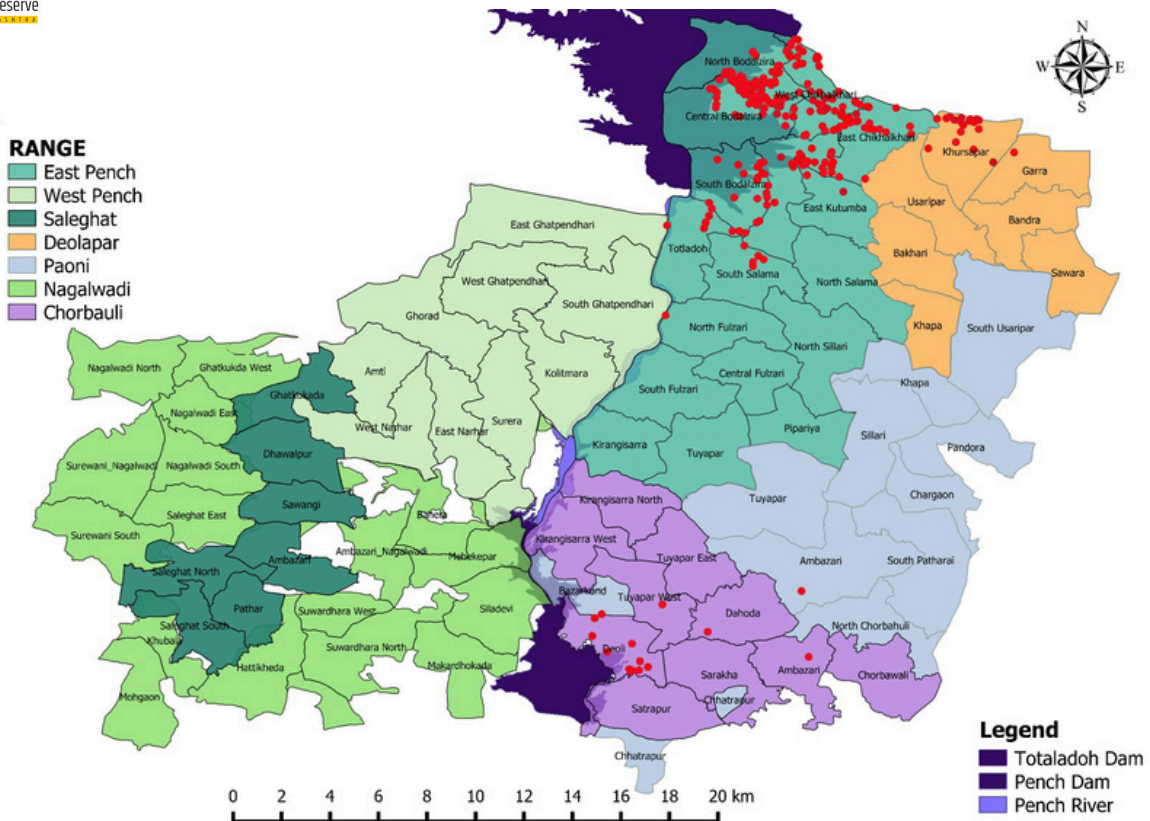
- Legend**
- Totaladoh Dam
 - Pench Dam
 - Pench River



Pench Tiger Reserve, MH. Indian Pangolin Animal Records (April 2022 to March 2023)

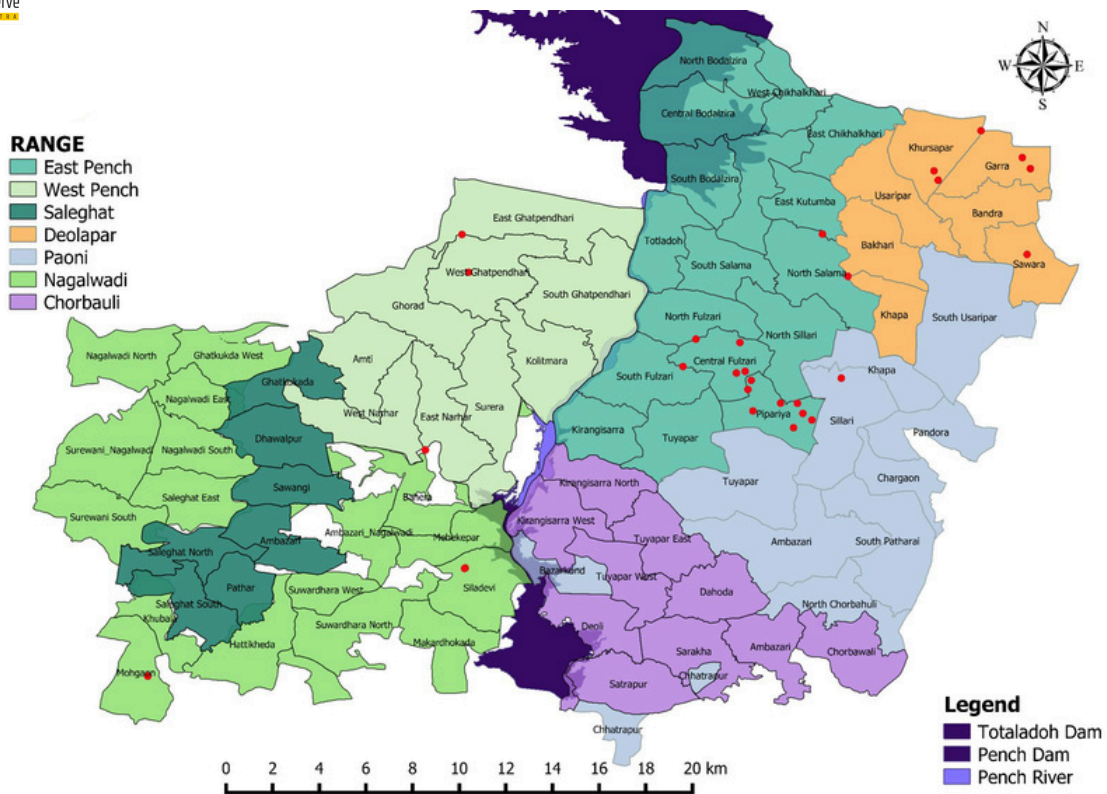


Pench Tiger Reserve, MH. Golden Jackal Animal Records (April 2022 to March 2023)

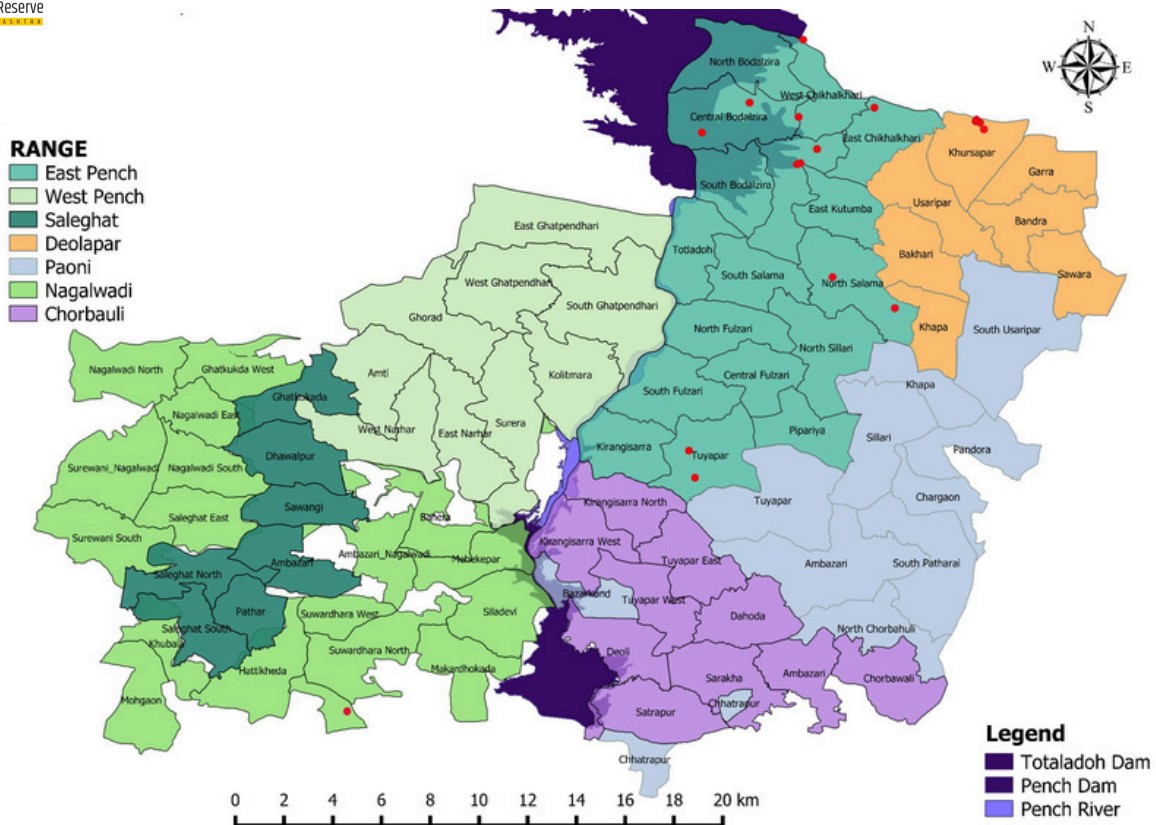




Pench Tiger Reserve, MH. Jungle Cat Animal Records (April 2022 to March 2023)

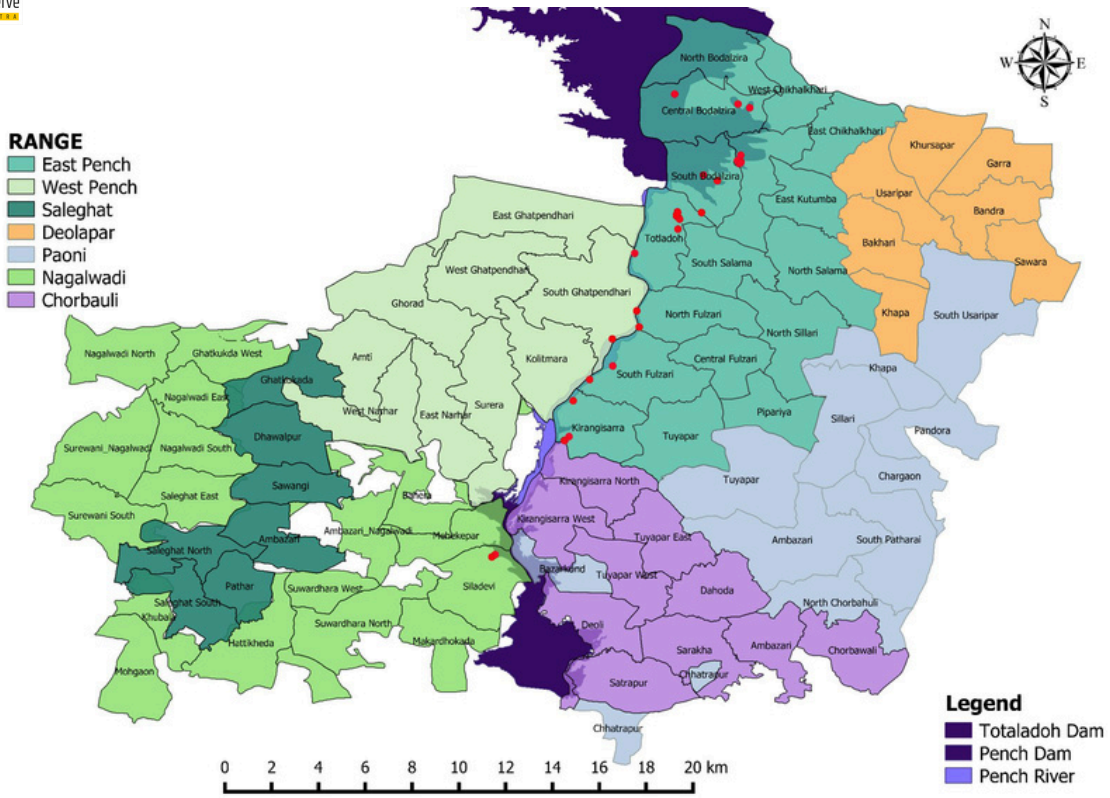


Pench Tiger Reserve, MH. Junglefowl Records (April 2022 to March 2023)

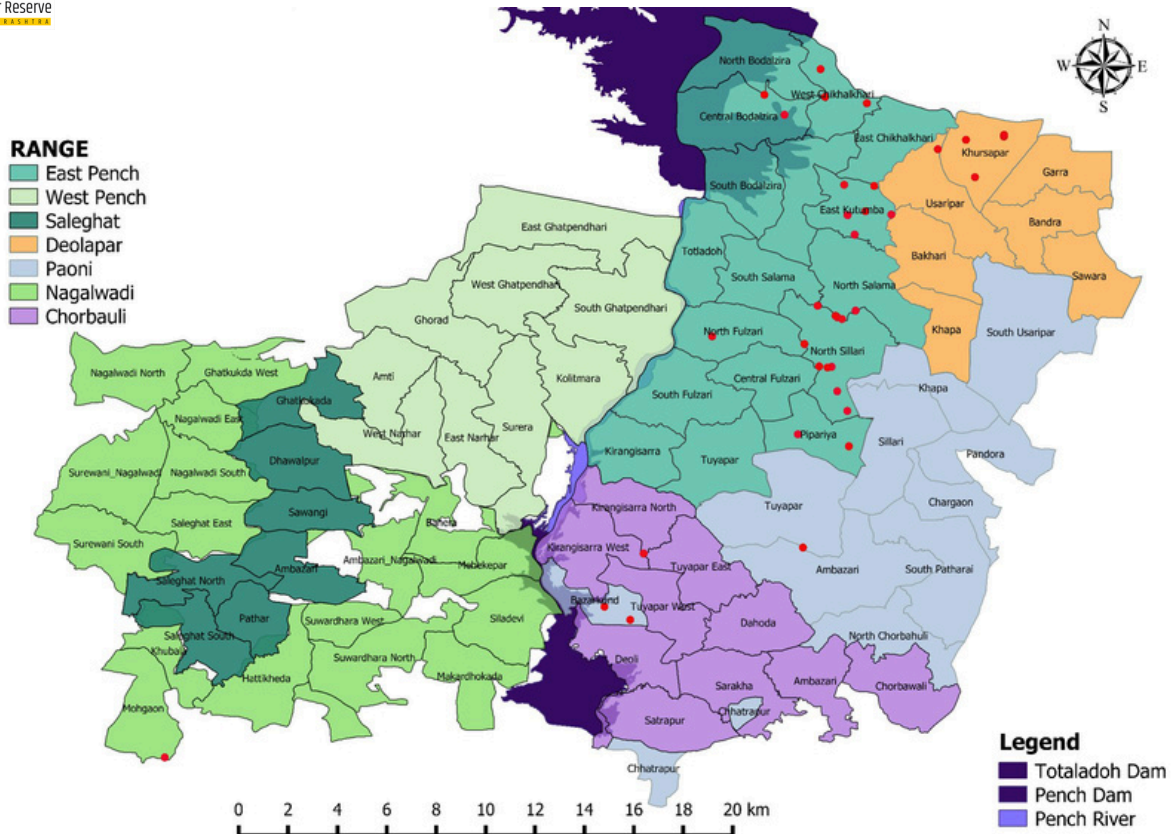




Pench Tiger Reserve, MH. Mungger Records (April 2022 to March 2023)

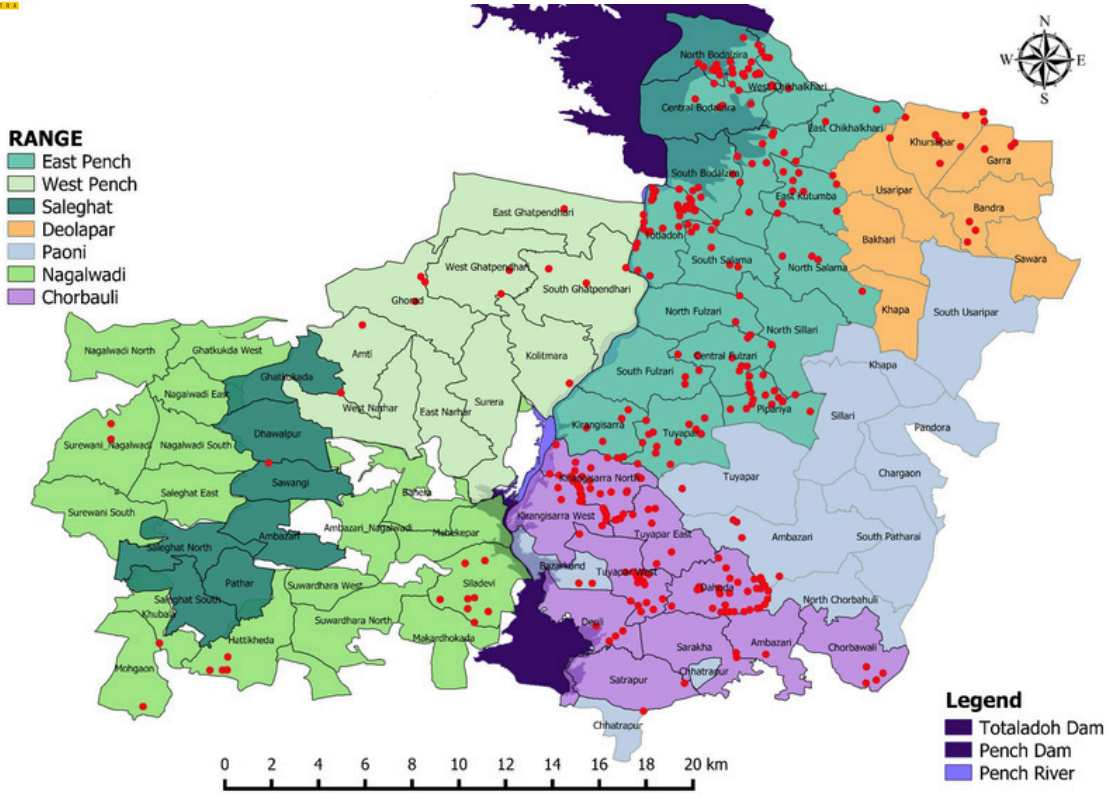


Pench Tiger Reserve, MH. Mongoose Animal Records (April 2022 to March 2023)

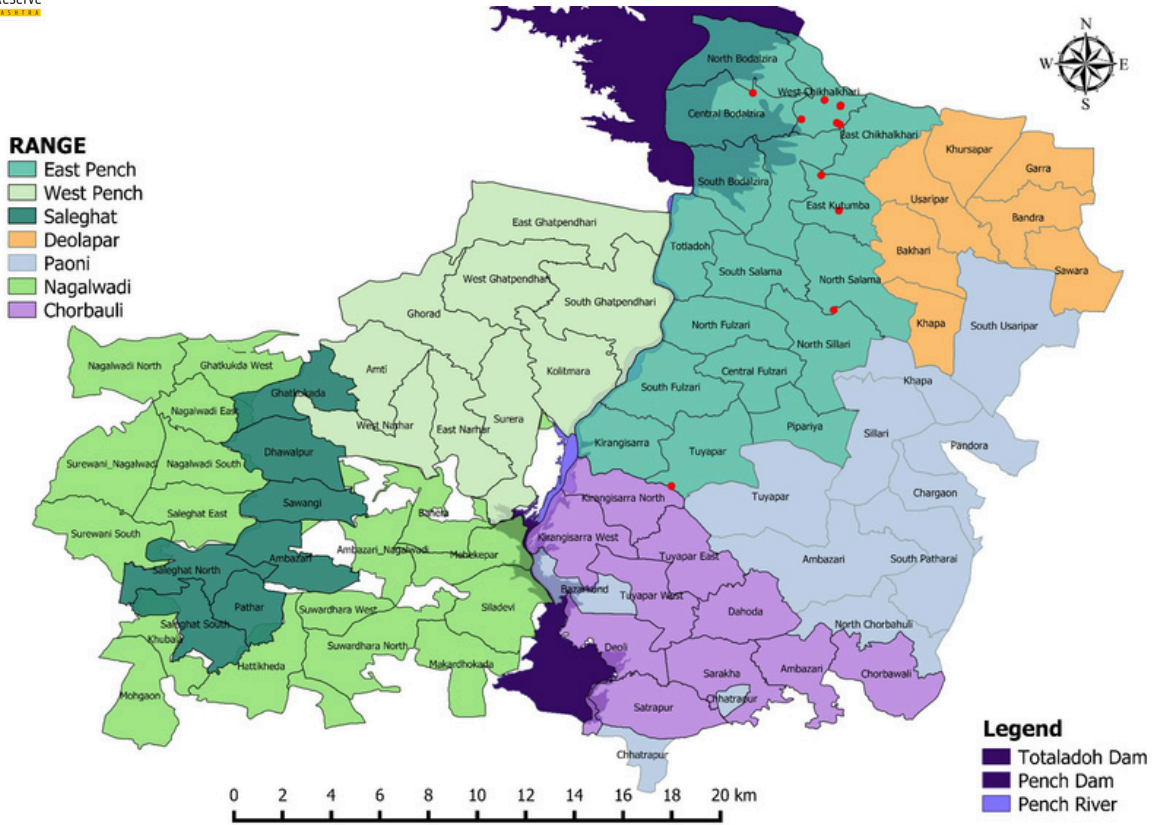




Pench Tiger Reserve, MH. Monitor Lizard Records (April 2022 to March 2023)

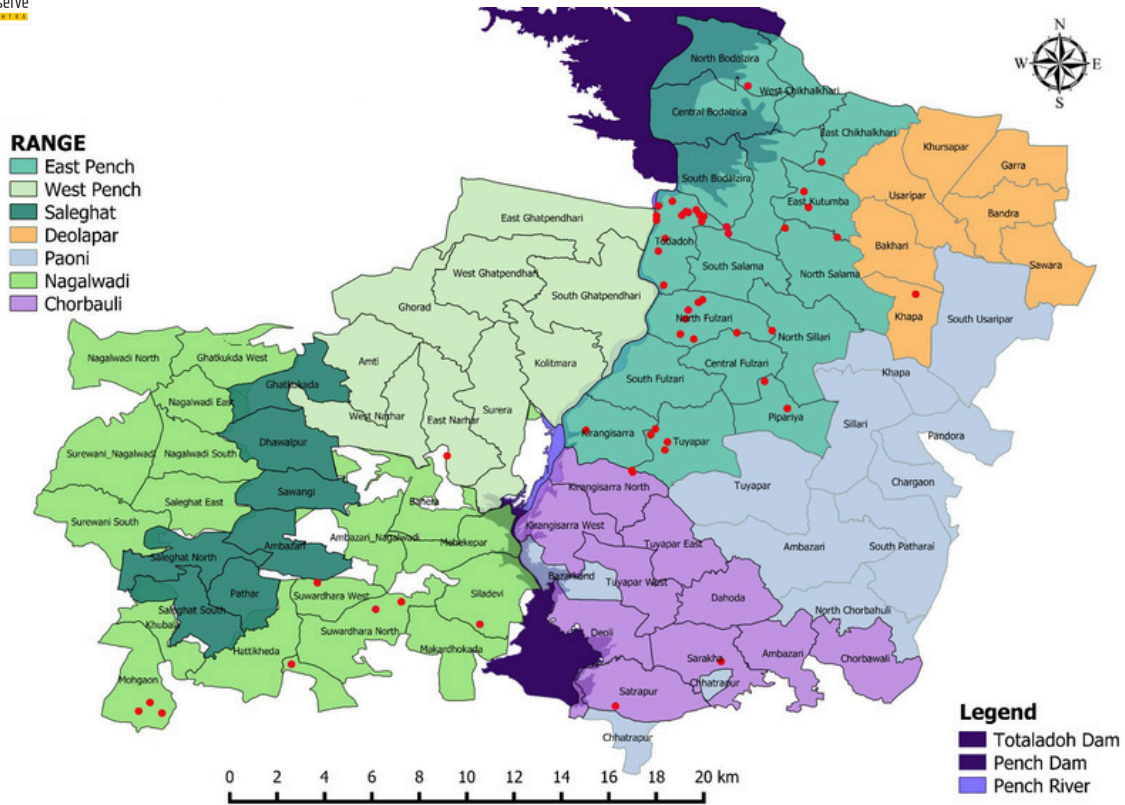


Pench Tiger Reserve, MH. Peafowl Records (April 2022 to March 2023)

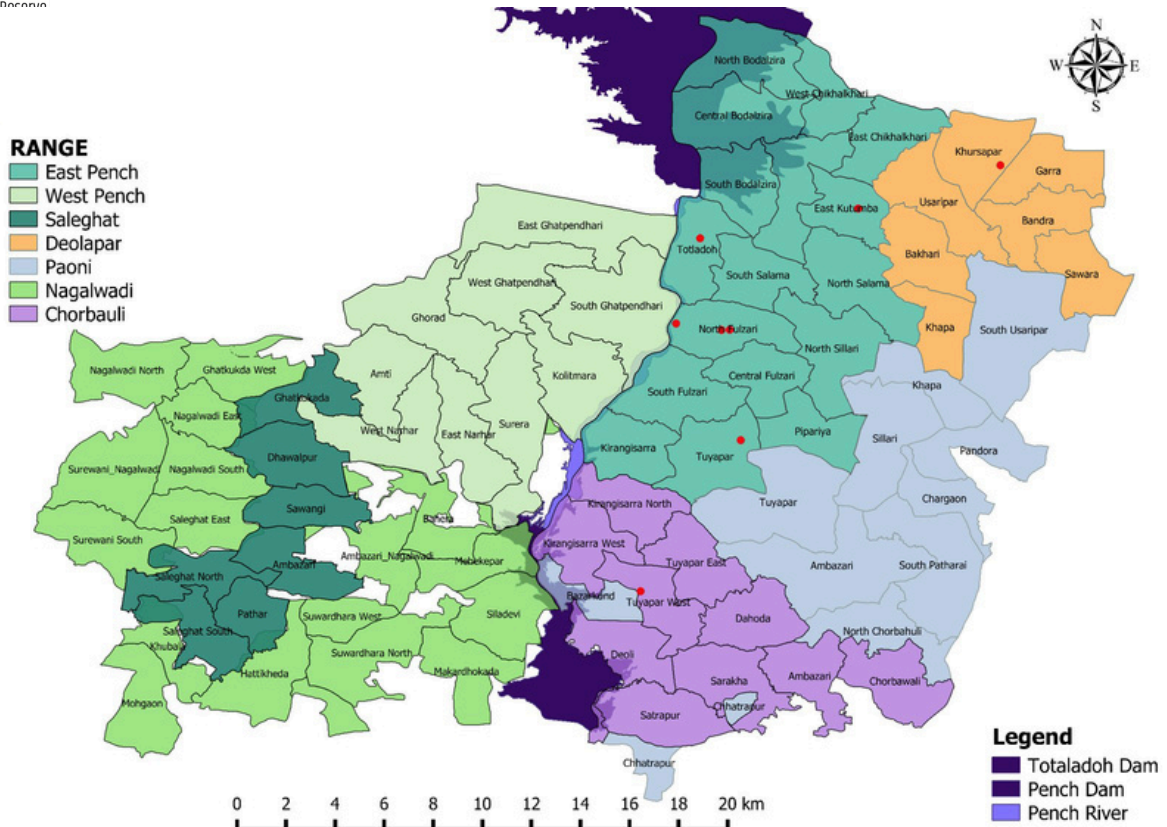




Pench Tiger Reserve, MH. Porcupine Animal Records (April 2022 to March 2023)



Pench Tiger Reserve, MH. Python Records (April 2022 to March 2023)





**PENCH TIGER RESERVE,
MAHARASHTRA**

M-STrIPES

Implementation Annual Report

(April 2022 To March 2023)

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