



Status of Great Indian One Horned Rhinoceros in West Bengal 2022





Preface

A scientific and sound management of wildlife mainly relies on the periodic collection of data on the population of the species, trend in population and distribution of wildlife.

Globally, the total population of Rhinoceros which include 5 sub-species (White Rhino, Black Rhino, Javan Rhino, GIOH Rhino, Sumatran Rhino) amounts to 29000. Of the total Rhinoceros population, the GIOH Rhinoceros amounts to 3550. The home range of GIOH Rhinoceros which once spread from Pakistan to Myanmar has now been limited to few pockets such as Assam, West Bengal, Uttar Pradesh and Nepal.

The population estimation exercise of One horned Indian Rhinoceros in Jaldapara National Park and Gorumara National Park was conducted on 25th March, 26th March, 2022 & 29th March, 30th March 2022 respectively.

Analyzing the trend in the population of GIOH Rhinoceros shows us a positive trend of increasing the GIOH Rhinoceros population from 14 in 1985 to 292 in 2022. This is an evidence to the successful wildlife management practices viz. protection protocols and habitat management interventions.

Although the population of GIOH Rhinoceros is steadily increasing, there is also constant threat from poaching, fragmentation and human encroachment of its prime habitat such as grasslands and riverine forest. The rise of population also necessitates the need for evaluation of the carrying capacity of the parks to establish a sustainable population of GIOH Rhinoceros.

This report is a collective summary of the management efforts taken, the results and further inputs for future interventions in wildlife management at Gorumara and Jaldapara Landscape.



The population estimation of wild animals is an important management tool for scientific management of a Protected Area (PA). The

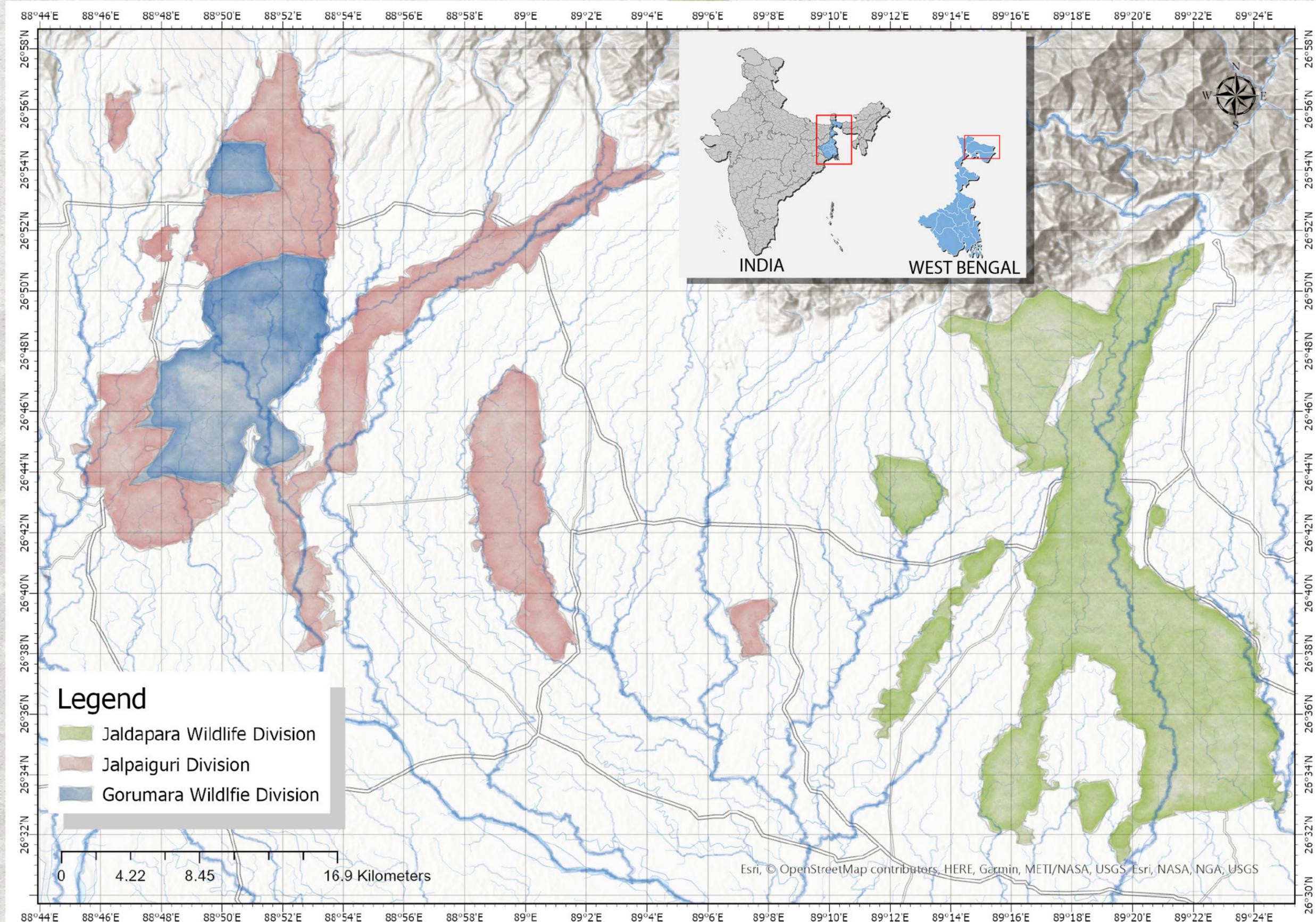
following are the primary objectives of conducting such population estimation of wild animals ;

- ✓ Estimation of numbers of the species.
- ✓ Sexing and determination of Male – Female Sex ratio
- ✓ Analysis of population trend and age class
- ✓ Monitoring of habitat and habitat utilization
- ✓ Determination of carrying capacity of PA's





LOCATION MAP OF THE PROTECTED AREAS





Details of area and Estimation Blocks

Jaldapara Landscape

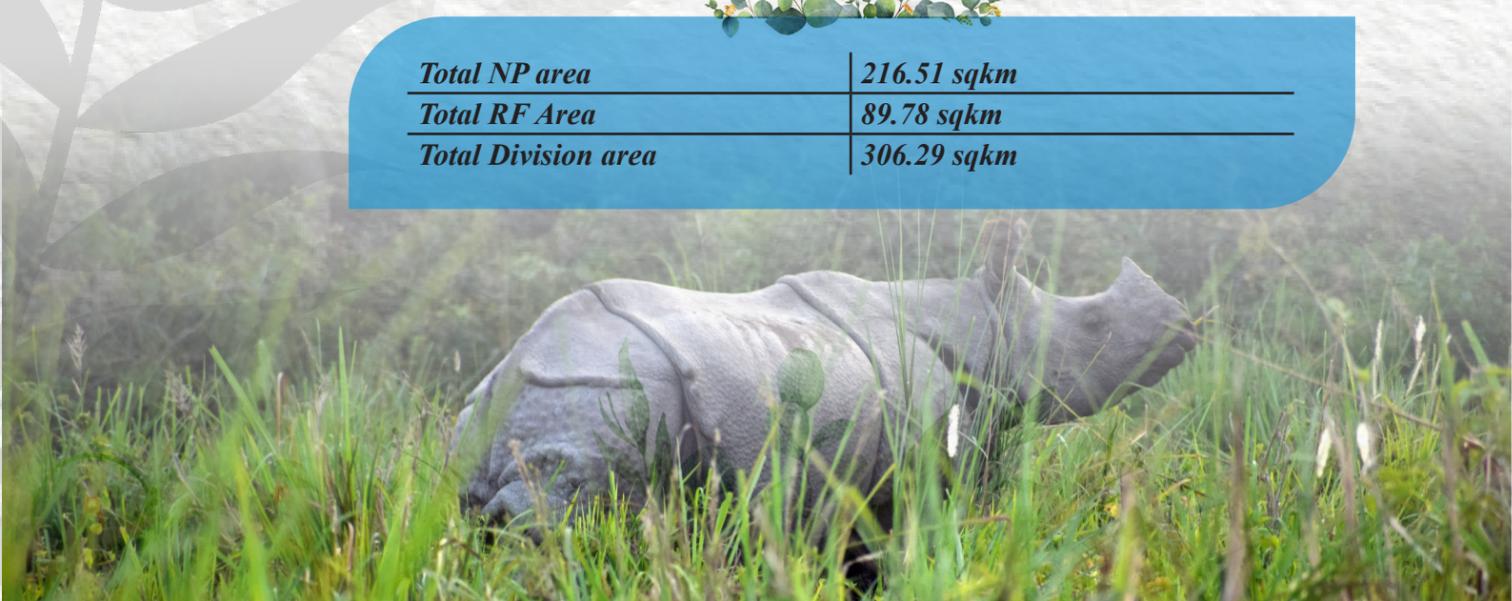
Sl No	Range	Beat	Area (in Ha)	Total Estimation Blocks
1	CP	BN	1527.73	4
2	CP	CP	1070.76	4
3	CP	MB	926.75	2
4	JPE	JP	1383.48	5
5	JPE	MLG	555.12	2
6	JPE	SSM	1157.79	4
7	JPE	DDG	556.01	1
8	JPN	SLT	602.7	2
9	JPN	50FT	822.85	3
10	JPN	NWC	947.89	3
11	JPN	HM	1318.61	3
12	JPW	BDK	543	2
13	JPW	HLG	905.86	3
14	JPW	MRD	600	2
15	JPW	TEC	600	2
16	JPW	KJN	598.39	2
17	KB	CCL	611.64	3
18	KB	MTR	1145.34	4
19	KB	NEC	566.34	2
20	KB	KB	630.89	2
Total	5 Ranges	20 Beats	17071.15	55

<i>Total NP area</i>	<i>216.51 sqkm</i>
<i>Total RF Area</i>	<i>89.78 sqkm</i>
<i>Total Division area</i>	<i>306.29 sqkm</i>

Gorumara Landscape

SL No	Range	Beat	Area in Ha.	Total Estimation Blocks
1	Gorumara North Range	Chapramari	959.81	3
2	Gorumara North Range	Khunia	1443.9	4
3	Gorumara North Range	Murti	1408.26	5
4	Gorumara South Range	Dhupjhora	1214.45	3
5	Gorumara South Range	Gorumara	2492.92	7
6	Gorumara South Range	Budhuram	1489.05	5
7	Gorumara South Range	Bichabhanga	1086.97	4
Total	2 Range	7 Beat	10095.36	31
Jalpaiguri Division				
8	Nathua Range	Gadhiarkuthi	1728.07	1
9	Nathua Range	Nathua	1800	1
10	Daina Range	Central Daina	1590	1
11	Daina Range	Khairkata & Sulkapara	1500.98	1
12	Ramsai Range	Kalamati Beat	650.45	1
13	Ramsai Range	Ramsai	650.03	1
14	Lataguri Range	Central Beat	684.58	2
15	Lataguri Range	Lataguri	600.55	2
16	Lataguri Range	Central & Baradighi	715.46	2
17	Lataguri Range	Baradighi	953.01	2
18	Chalsa Range	Nagrakata	1554.78	2
19	Chalsa Range	Sipchu	1072.4	2
20	Chalsa Range	Panjhora	1619.05	2
Total	5	13	15119.36	20
Grand Total	7	20	25214.72	51

<i>Gorumara NP</i>	<i>79.45 sqkm</i>
<i>Chapramai WLS</i>	<i>9.6 sqkm</i>
<i>Ramsai & Bamandanga Ext.</i>	<i>11.9 sqkm</i>
<i>Jalpaiguri Division RF</i>	<i>151.19 sqkm</i>
Total	252.14 sqkm





Enumeration Methodology

The method of 'Total Count' or 'Direct Count' is the population estimation of mega herbivores like Rhinoceros all over India and Nepal. Moreover, this method has been proved to be effective in estimating the wild population of Rhino in Jaldapara and Gorumara landscape in past also. Justification of following the 'Total Count' or 'Direct Count' method as ;

1. The target animal is slow moving big animal with great amount of acceptability of patrolling teams on a day to day basis.
2. Visibility in the Rhino bearing areas from elephant back with respect to rhino is very good with little or no chance of omission given the experience of the staff and mahuts.
3. Range and distribution is well known on a dynamic basis due to daily monitoring protocols available on GIS platform.

But, the major challenges in using Block count are.

- i) Total coverage of the entire distribution range.
- ii) Possibility of double count

Gorumara Wildlife Division and Jaldapara Wildlife Division has developed facilities and infrastructure to keep a constant vigil over all rhinos throughout its range. On the basis of experience gained from practice of "Scanning" which is done frequently in the parks, almost on a fortnightly basis and track analysis on GIS platform. An average area of 250-300 Ha. can be very conveniently scanned by a person on elephant back and as such an enumeration team of average size of 250-300 Ha. was be designed.

There has been a great gain in use of GIS technology by entire team of frontline staff of the park since last census conducted in 2015 & 2019. Daily patrols are done with GPS and patrolling tracks are analysed and discussed to design patrolling schedules and tracks. This is felt that sighting records if analysed with the help of patrolling tracks with reference to space and time can prove to be great tool for validating individual sighting records and ruling out double counts. Moreover, a survey team with a GPS is in a better situation to visualise its location, boundary of the unit and coverage on a real time basis. And therefore, as a change in tradition block count method, it has been decided to provide each enumeration unit with a GPS having preloaded map of the enumeration unit block.





Whenever the Rhinos are sighted, the following details were noted

- Presence of Rhino, sighting reports and daily monitoring data – these three components were taken into account while deciding the enumeration area for Rhino estimation in these PA's and adjoining forest.
- The estimation was conducted for two (02) days in Jaldapara National Park on 25th & 26th March 2022 and 29th & 30th March 2022. On 23rd & 24th March 2022 training programme was organized at Madarihat NIC and on 26th & 27th March at Muri Complex involving the officers, frontline staff, Banyapran Sathi, JFMC members, institutes and NGO representatives.
- Enumeration Blocks (EB) and Observation Lines (OL) were formed and each EB was digitized with the help of GARMIN E Trex-30 & E Trex-20 GPS. A total 55 EB's were identified and digitized in Jaldapara and XX number in Gorumara. In addition to this 51 OLs in Jaldapara and XX OLs were also identified in the PA's respectively.
- Each team leader of EB's was provided GPS preloaded with the digitized map of the concerned EB only. On an average each team consisted of 3-4 members including NGO representative.
- Departmental Elephants were deployed to the allotted EB's one day in advance.

The enumeration parties acquainted the area prior to the start of the census viz., EB boundary, important points (e.g. wallow pool, Glade, Salt licks, Dung piles, Fodder plantation, Grasslands etc.), where the Rhinos are likely to be sighted. A total of 53 and XX departmental elephants were deployed in the population estimation exercise in Jaldapara and Gorumara WLD and respectively.

- On ELs depending on the visibility persons were allotted to observe the movement of rhinos from one EB to other EB. As Rhinos move in particular paths (dandies), staffs were deputed on all such paths.
- On the day of estimation all the enumeration party members reached the predetermined starting point within 5.30 am. All enumeration parties were provided with the estimation kit consisting of coloured EB map, data sheet, Special features sheet, pen/pencil, water bottle etc.
- The estimation started at 6.00 am simultaneously all over the enumeration area. The enumeration parties moved within the enumeration block for covering maximum area possible within the enumeration block. Whenever the Rhinos are sighted, the following details were noted;



- The recorded movement track of each team in EB was subsequently transferred from GPS to GIS Data analysis platform (ArcGis).
- GPS data, data sheets, photographs and data generated by each EB and OL was analysed by Officers subsequently at Divisional level to arrive at a logical

conclusion. While analysing the directly sighted data of two (02) days estimation, the higher number sighted in a single day was taken into consideration to ascertain the population estimation range of Great One-horn Rhinoceros in both the PA's.





Sample Field Data Sheet for 2022 Estimation

Rhino Identification Special Features Sheet (For per individual)



FIELD DATA SHEET FOR GIOR RHINOCEROS POPULATION ESTIMATION 2022
JALDAPARA NATIONAL PARK



Unit no.: Range: Compartment: Date:
 Beat: Division: Jaldapara Wildlife Division
 Starting Place: GPS Location: Starting time:
 Finishing Place: GPS Location: Finishing time:
 Mobile No of Team Leader:

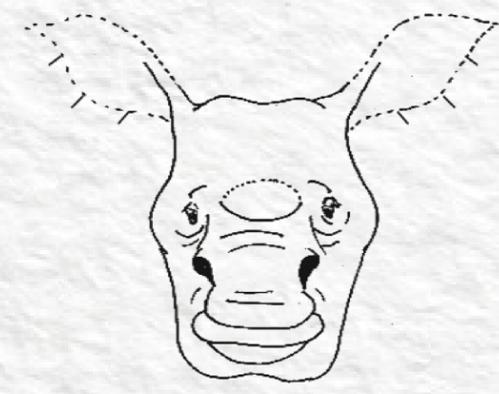
Sl. No.	Time of sighting	Block/ Compt.	Direction of movement	No. of Rhinos sighted	Sighting GPS Location (D-M-S)	Habitat (Put Tick Mark)	Adult (Above 5'4")			Sub-Adult (4' to 5'4")			Calf (2' to 4')			Activity	Remarks
							M	F	U	M	F	U	M	F	U		
			SHI <input type="checkbox"/> SW <input type="checkbox"/> N <input type="checkbox"/> NW <input type="checkbox"/> E <input type="checkbox"/> W <input type="checkbox"/> SE <input type="checkbox"/> S <input type="checkbox"/> NE <input type="checkbox"/>			Tall Grassland <input type="checkbox"/> Short Grassland <input type="checkbox"/> Woodland <input type="checkbox"/> River Bed <input type="checkbox"/> Wetland <input type="checkbox"/>									Mating <input type="checkbox"/> Feeding <input type="checkbox"/> Resting <input type="checkbox"/> Wallowing <input type="checkbox"/> Other <input type="checkbox"/>		
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Note: For Special features of the animal (shape and size of horn, scar mark, sign of external injury, tail length, skin folds, ear marks etc.) please fill-up the 'Special Feature Sheet' for each Rhino sighted.

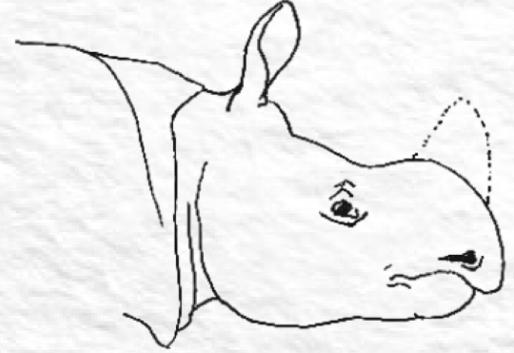
Signature of the team leader

Checked By
Range Officer
..... Range

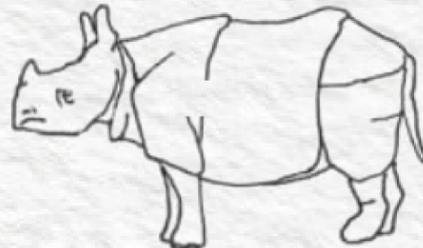
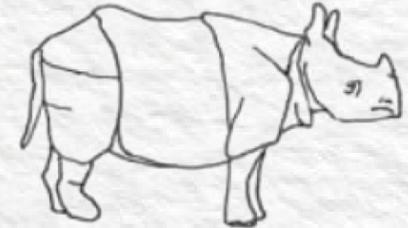
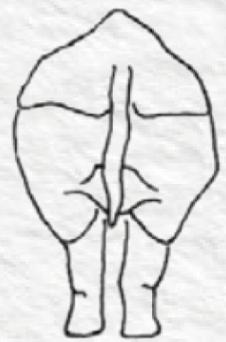
Enumeration Block No: Sighting No: Date:



Draw ear type / tears and facial marks
Description (if any)



Draw Horn Shape
Description (if any)



Draw scar mark, Throat fold, sign of external injury, tail length, skin folds etc

Description (if any)

No of Ribs seen (Right)..... (Left).....

Note





Enumeration Block

Jaldapara Wildlife Division

Sl No	Range	Beat	Comptt	Area in ha	Unit No	Mode	Team Member
01	Chilapata	Bania, Chilapata, Mendabari	BN - 1(a) (b), 2,3,4, 5,8 (a), 8 (b), 7, CP - 3 (a), MB - 4, MB - 5 (p), 1, 2,	3525.2 Ha	1 to 9 & 55 (10 Nos)	Elephant and Foot	30 Staff 6 DL
02	Kodalbasti	CC Line, NEC, Mantharam, Kodalbasti	MB -1(p), 5B, 6B, 6A, BD - 7b, 4, MLG-3(P), BD-5, BD - 8, BD-2, BD-6b, BD - 1B, MLG-1(p), BD-7A, BD-6A	2954.2 Ha	10 to 19 & 57 (11 Nos)	Elephant and Foot	29 Staff 7 DL
03	JP North	NWC, 50 FT, Siltorsa, Hasimara	JP - 1(p), 2, 4 (p), 5 (p), 4, 1, HM-4 3B, 3A, HM, 1, 2	3692.1 Ha	21 to 31 (11 Nos)	Elephant and Foot	40 Staff 2 DL
04	JP West	Hollong, TEC, Moiradanga, Kunjanagar, Bangdaki	TRS-1,2,3, JP-5(p),	3247.25	32, 34 to 43 (11 Nos)	Elephant and Foot	39 staff 2 DL
05	JP East	Jaldapara Sisamara Malangi DDG Beat	JP - 3(P), MLG - 1, 2, 3, CP-1(p), 3B, 4B	3652.40	33, 44 to 54 (13 Nos)	Elephant	40 Staff 2 nos DL

Gorumara Wildlife Division

Sl no.	Range	Beat	Compartment	Area in Ha.	Unit No.	Mode	Team member
1	Gorumara South Range	Gorumara Bichabhanga Budhuram Dhupjhora	South Indong-II, III, Gorumara-I,II, Dhupjhora-I,(A),I(C) South Indong-III, Gorumar-II, Jaldhaka-I(A),(B), Tonduramandanga Ext, Barahati-I, Medla-I, II, III, Central-I, Barahati-II, III, Ramsai Extension, Dhupjhora-1 (B), South Indong -I, Bhogolmardi-III, Tondur-IV	6283.39	13 TO 16 & 18 to 31 Unit	On foot and elephant	93 staff, 6 NGO and 2 EDC
2	Gorumara North Range	Chapramari Beat, Khunia Beat, Murti Beat	Chapramari-III, II, Panjhora- 1 (A), 2(A), 4 (A), Selkapara- I, II, Tondur-III, II, Bhogolmardi-I, II, Kakorjhora-I, II, Tondur-I	3811.97	1 to 12 Unit	On foot & Elephant	49 staff & 5 NGO

Jalpaiguri Forest Division

Sl no.	Range	Beat	Compartment	Area in Ha.	Unit No.	Mode	Team member
1	Nathua Range	Gadhiarkuthi, Nathua	Ramsai, South Daina Part Jaldhaka	3528.07	32 & 33 Unit	On foot	8 staff 2 NGO
2	Daina Range	Central Daina, Khairkata & Sulkapara	Central Daina	3090.98	34 & 35 Unit	On foot	8 Staff & 2 NGO
3	Ramsai Range	Kalamati Beat, Ramsai	LT-III, BCB-II Part, LT-VI, VI Part,BCB-II	1300.48	36 & 37 Unit	On foot	8 Staff
4	Lataguri	Central Beat, Lataguri, & Baradighi	Central-III, II, Lataguri-I, Bichabhanga-I, Sursuti-V, IV, I, II, III	2953.6	38 to 44 Unit	On foot	21 Staff
5	Chalsa Range	Nagrakata, Sipchu, Panjhora	Hila-II (2a,2b,,4a,4b,), Udla-3,4 & 5, Udla-1,12a,2b, Chapramari-IA, IB,Sipchu 2a,2b,2c, Panjhora-Ic,2b,,3,5 &7, Panjhora-Iva,lvb, & &VI	4246.83	45 to 50	On foot	22 Staffs

Enumeration Area

The estimation of Rhinoceros population was conducted over major area of Jaldapara National Park (170.71 sqkm) and Gorumara Wildlife Division (79.45 sqkm), adjoining area of Chamramari WLS (9.6 sqkm) Ramsai & Bamandanga Extension area (11.9 sqkm) and in adjoining reserve forest areas of Jalpaiguri Division (151.19 sqkm) where Rhinoceros movement is normally observed during daily Rhinoceros monitoring protocol. There are two reasons for selecting this time of the year for conducting population estimation of Rhinoceros, Firstly during January and February the vegetation dries up and visibility is increased, this provides ideal condition for any enumeration exercise. Secondly, all the previous enumerations were conducted during this period of the year. This will help in comparing the enumeration data of different year, which shall validate this scientific exercise through statistical analysis & arriving at logical conclusions.



NGO Participation

Jaldapara Wildlife Division

SL No	Name of NGO / Institution
1	Animal Help Line
2	Mekhaliganj Welfare Organization.
3	Association For Conservation & Tourism (Act) Central Dooars
4	Wild Nature Club, Madarihat
5	WPSI, NB Jalpaiguri
6	Banyapran Sathi
7	Nature Help Organisation

Gorumara Wildlife Division

Sl No	Name of NGO / Institution
1	HNAF
3	SNAP
5	SPOAR
8	Gairkata Aranyak
10	Maynaguri PPS
14	Teesta Trust
16	Nature Help Organization





Enumeration Unit & Observation Line Survey Data

Jaldapara Wildlife Division, Day 1, (EU+OBS Line) Total Abstract

Range	Adult				Calf				Sub-Adult				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
CP	8	10	1	19	0	1	4	5	2	2	0	4	28
JPE	42	41	0	83	8	3	18	29	9	9	5	23	135
JPN	9	10	1	20	0	0	6	6	2	0	2	4	30
JPW	22	17	2	41	2	4	7	13	5	2	0	7	61
KB	13	8	1	22	3	4	2	9	0	0	0	0	31
Total	94	86	5	185	13	12	37	62	18	13	7	38	285

Jaldapara Wildlife Division, Day 2, (EU+OBS Line) Total Abstract

Range	Adult				Calf				Sub-Adult				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
CP	11	8	2	21	1	0	4	5	0	2	1	3	29
JPE	45	35	0	80	6	5	25	36	15	5	9	29	145
JPN	15	10	0	25	1	0	13	14	1	0	2	3	42
JPW	18	13	1	32	3	2	7	12	8	2	0	10	54
KB	9	5	0	14	5	1	1	7	2	2	0	4	25
Total	98	71	3	172	16	8	50	74	26	11	12	49	295

CP - Chilapata, JPE - Jaldapara East, JPN - Jaldapara North, JPW - Jaldapara West, KB - Kodalbasti

Final Count of Jaldapara

The Final Count on Day 1 (25th March 2022) - 285 +2

The Final Count of Day 2 (26th March 2022) - 295+2

(Note +2 is added w.r.t two (2) rhinos outside the enumeration area, one in Titi Forest and one in Patlakawa Forest)

After calculation the data of 2 days with standard deviation

- MEAN = 292
- Standard Error = +5

TOTAL COUNT OF GIOH RHINOS IN JALDAPARA NATIONAL PARK = 292+5 (287 - 297)

Range	Adult				Sub-Adult				Calf				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
JPE	43	38	0	81	13	6	7	26	7	4	22	33	140
JPW	20	15	2	37	7	2	0	9	2	3	7	12	58
JPN	12	10	0	22	2	1	2	5	0	0	10	10	37
KB	11	7	0	18	1	1	0	2	4	3	1	8	28
CP	10	9	2	21	1	2	0	3	1	0	4	5	29
Total	96	79	4	179	24	12	9	45	14	10	44	68	292

Abstract

Sex Wise Abstract

Range	Female	Male	UN*	Total
JPE	63	48	29	140
JPW	29	20	9	58
JPN	14	11	12	37
KB	16	11	1	28
CP	12	11	6	29
Total	134	101	57	292

Sex Wise Chart



Sex Ratio

Sex ratio is calculated as - no. of female Rhinos/ no. of male Rhinos

Sex ratio of identifiable individuals in 2019 - 0.959

Sex ratio of identifiable individuals in 2022 - 1.327

Age Class Wise Abstract

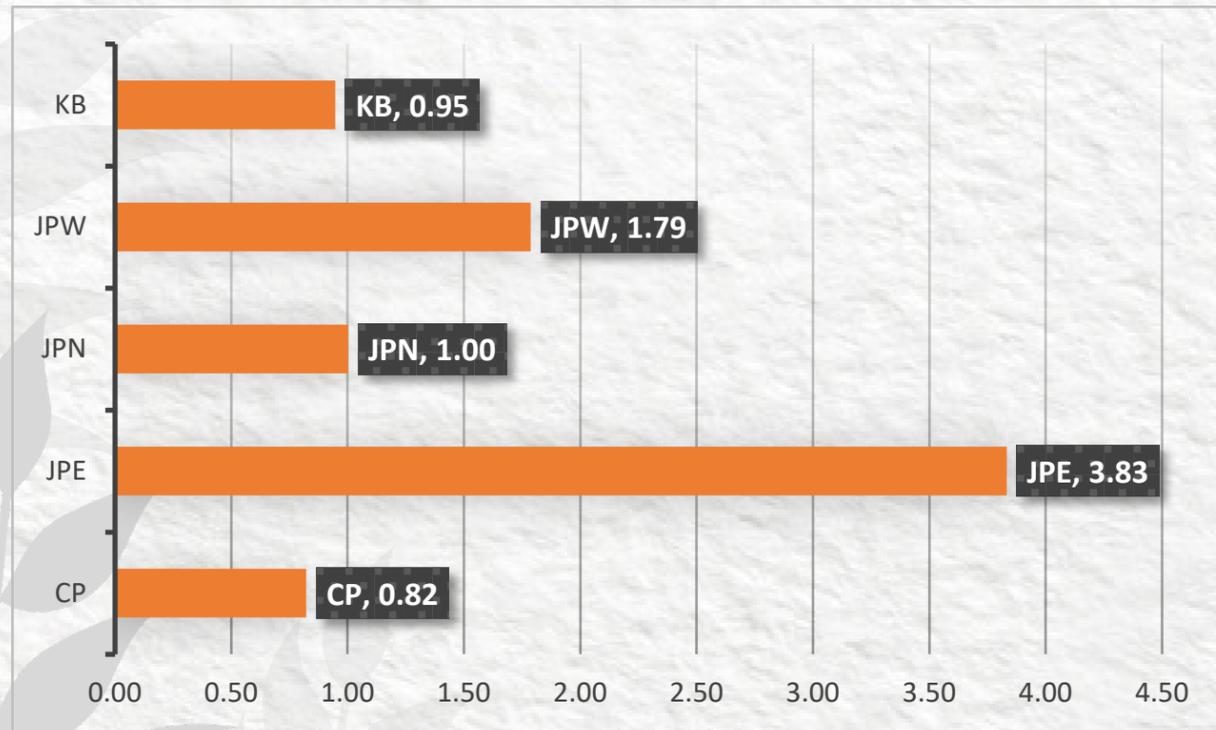
Range	Adult	S. Adult	Calf	Total
JPE	81	26	33	140
JPW	37	9	12	58
JPN	22	5	10	37
KB	18	2	8	28
CP	21	3	5	29
Total	179	45	68	292

Age Class Wise Chart



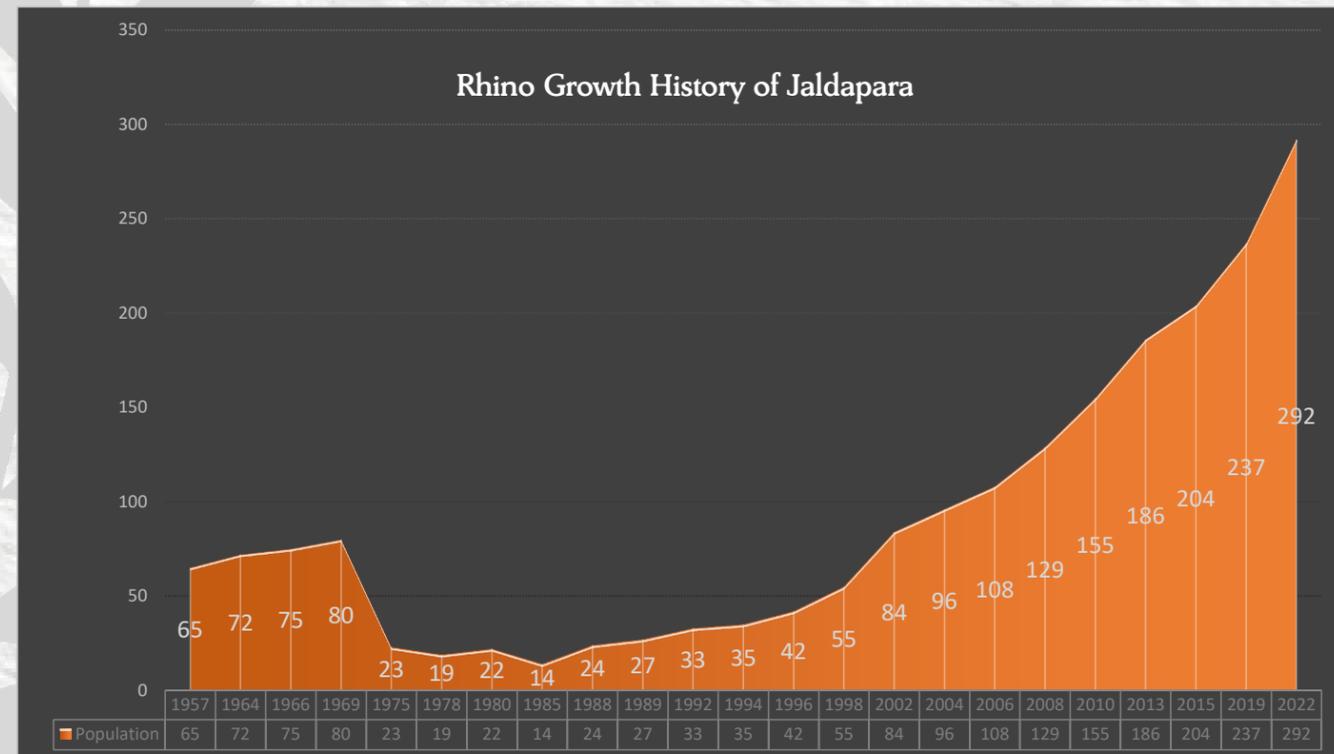


Density



Comparison with 2019 Data

Year	Adult				Sub-Adult				Calf				Grand Total
	F	M	U	Total	F	M	U	Total	F	M	U	Total	
2019	56+3	68+1	2	126+4	27	23	7	57	8	6	34+2	48+2	231+6
2022	96	79	4	179	24	12	9	45	14	10	44	68	292





Final Count of Gorumara

Gorumara Wildlife Division, Day 1, (EU+OBS Line) Total Abstract

Range	Adult				Calf				Sub Adult				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
GM South	19	3	0	22	5	6	3	14	2	6	4	12	1
GM North	0	1	0	1	0	0	0	0	0	0	0	0	48
Nathua	1	2	0	3	0	0	1	1	0	0	0	0	4
Total	20	6	0	26	5	6	4	15	2	6	4	12	53

Gorumara Wildlife Division, Day 2, (EU+OBS Line) Total Abstract

Range	Adult				Calf				Sub Adult				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
GM South	16	9	4	29	2	5	4	11	3	3	0	6	46
GM North	0	1	0	1	0	0	0	0	0	0	0	0	1
Nathua	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	16	10	4	30	2	5	4	11	3	3	0	6	47

The Final Count on Day 1 (29th March 2022) – 47 + 5

The Final Count of Day 2 (30th March 2022) – 53 + 5

(Note : 05 known Rhinos (1 . Champion, Adult, male. 2. Madhai, Adult, male. 3. Garati Yubraj, Adult, male, 4. Santi, Adult, female with unsexed calf)

After calculation the data of 2 days with standard deviation

- MEAN = 55
- Standard Error = (+/-) 6

TOTAL COUNT OF GIOH RHION'S IN GORUMARA NATIONAL PARK = 55 (+/-) 6 (61 / 49)

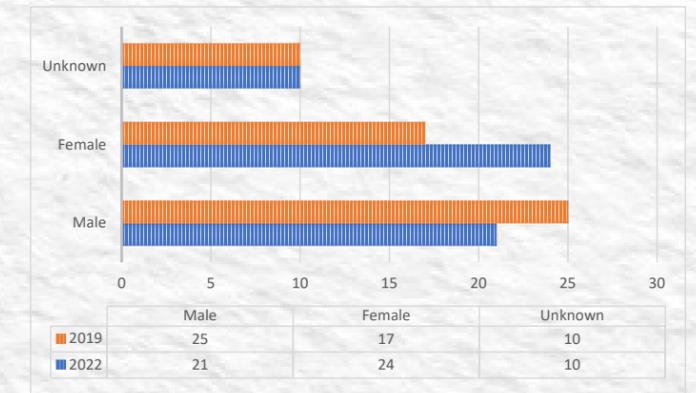
Abstract

Range	Adult				Sub-Adult				Calf				Grand Total
	F	M	UN	Total	F	M	UN	Total	F	M	UN	Total	
GM North Range	0	1	0	1	0	0	0	0	0	0	0	0	1
GM South Range	17	6	3	26	3	4	2	9	3	6	3	12	47
Nathua Range	0	1	0	1	0	0	0	0	0	0	1	1	2
Grand Total	17	8	3	28	3	4	2	9	3	6	4	13	50
Known Rhino	1	3	0	4	0	0	0	0	0	0	1	1	5
Total	18	11	3	32	3	4	2	9	3	6	5	14	55

Sex Wise Abstract

Sex	2022	2019
Male	21	25
Female	24	17
Unknown	10	10
Total	55	52

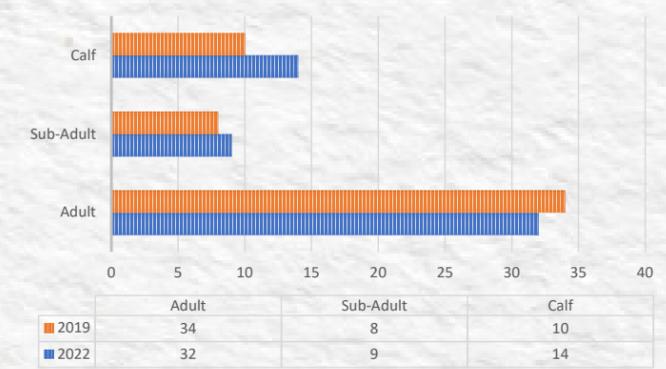
Sex Wise Chart



Age Class Wise

Age Class	2022	2019
Adult	32	34
Sub-Adult	9	8
Calf	14	10
Total	55	52

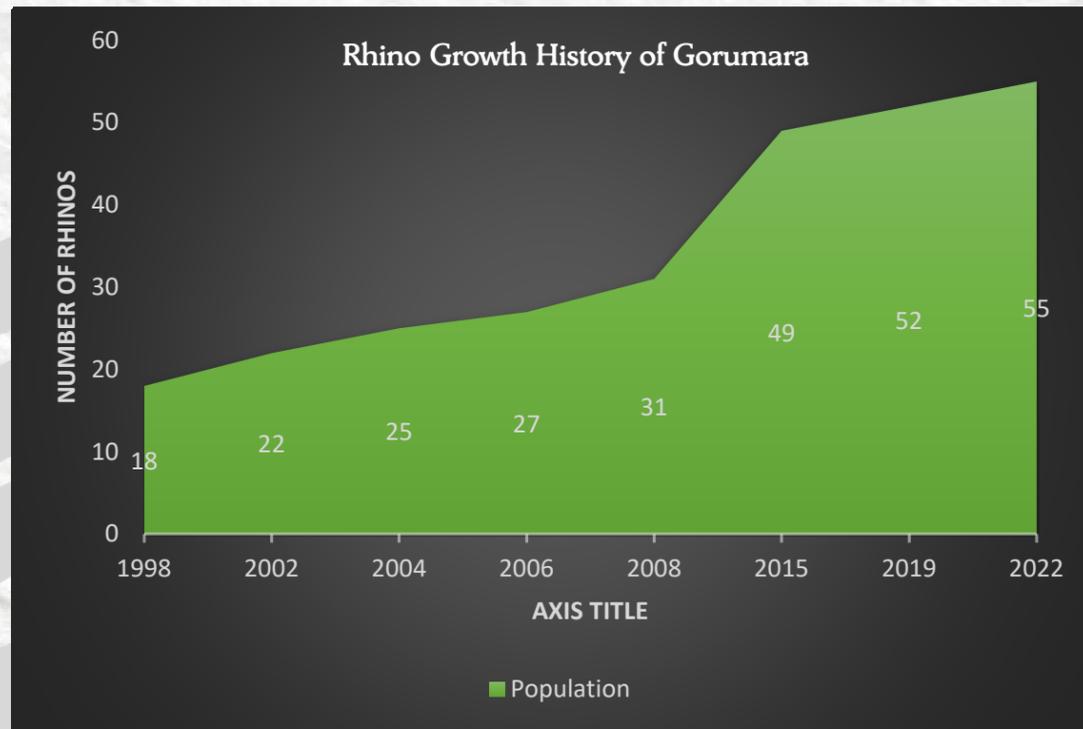
Age Class wise Chart





Comparison with 2019 Data

Year	Adult				Sub-Adult				Calf				Grand Total
	F	M	U	Total	F	M	U	Total	F	M	U	Total	
2019	5	18	1	24	2	4	2	8	0	3	7	10	42
2022	18	11	3	32	3	4	2	9	3	6	5	14	55



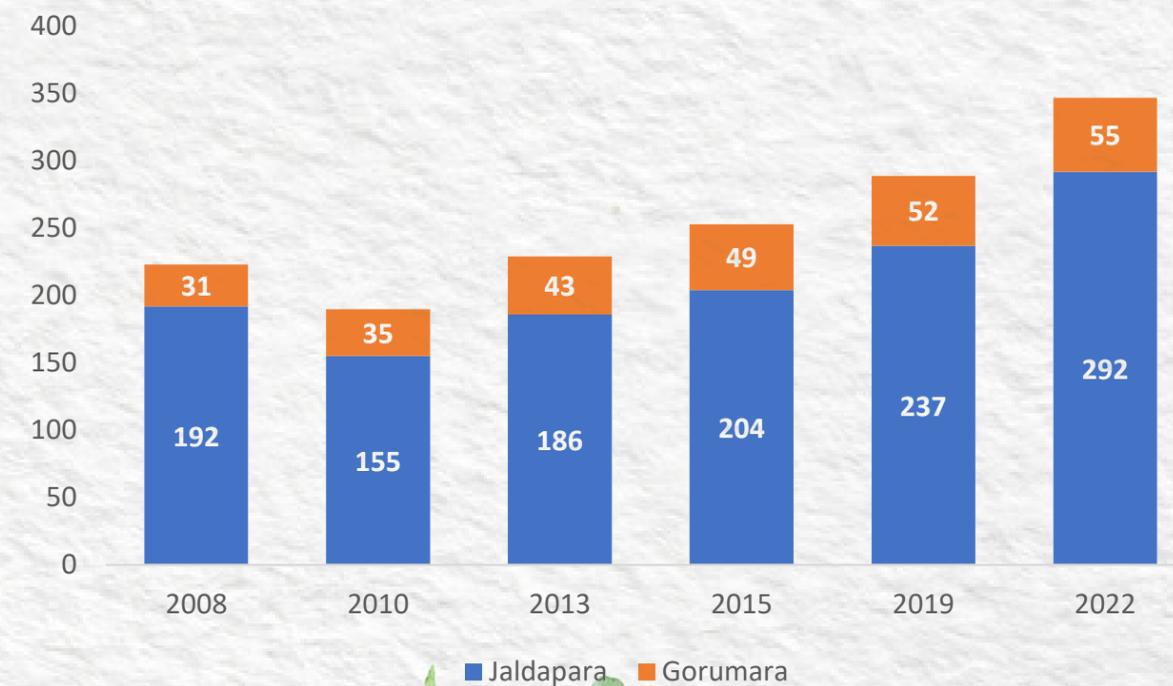
Conclusion

Jaldapara & Gorumara Wildlife Division

The sex ratio of Rhinoceros population in Jaldapara landscape was estimated as Male : Female - 101:134 i.e. 1:1.32 This ratio has been obtained without considering 57 un-sexed individuals (Adult – 04, Sub-Adult – 9, Calf – 44). The sex ratio of 1:1.32 is significant increase from the sex ration of the Rhino population estimation 2019. Along with the positive improvement in sex ratio, the Rhino population has also increased significantly to 292 individuals (increase of 55 individuals since 2019). The positive population growth establishes that wild Rhino population of Jaldapara

landscape is having a healthy sex ratio. The Sex Ratio of Indian Rhinoceros in Gorumara landscape comes out to be Male: female - 21:24 i.e. 1:1.14. The positive change of sex ratio from 2019 census which was 1: 0.68, is a very good sign for the National Park. The said ratio has been obtained without considering 10 un-sexed individuals.

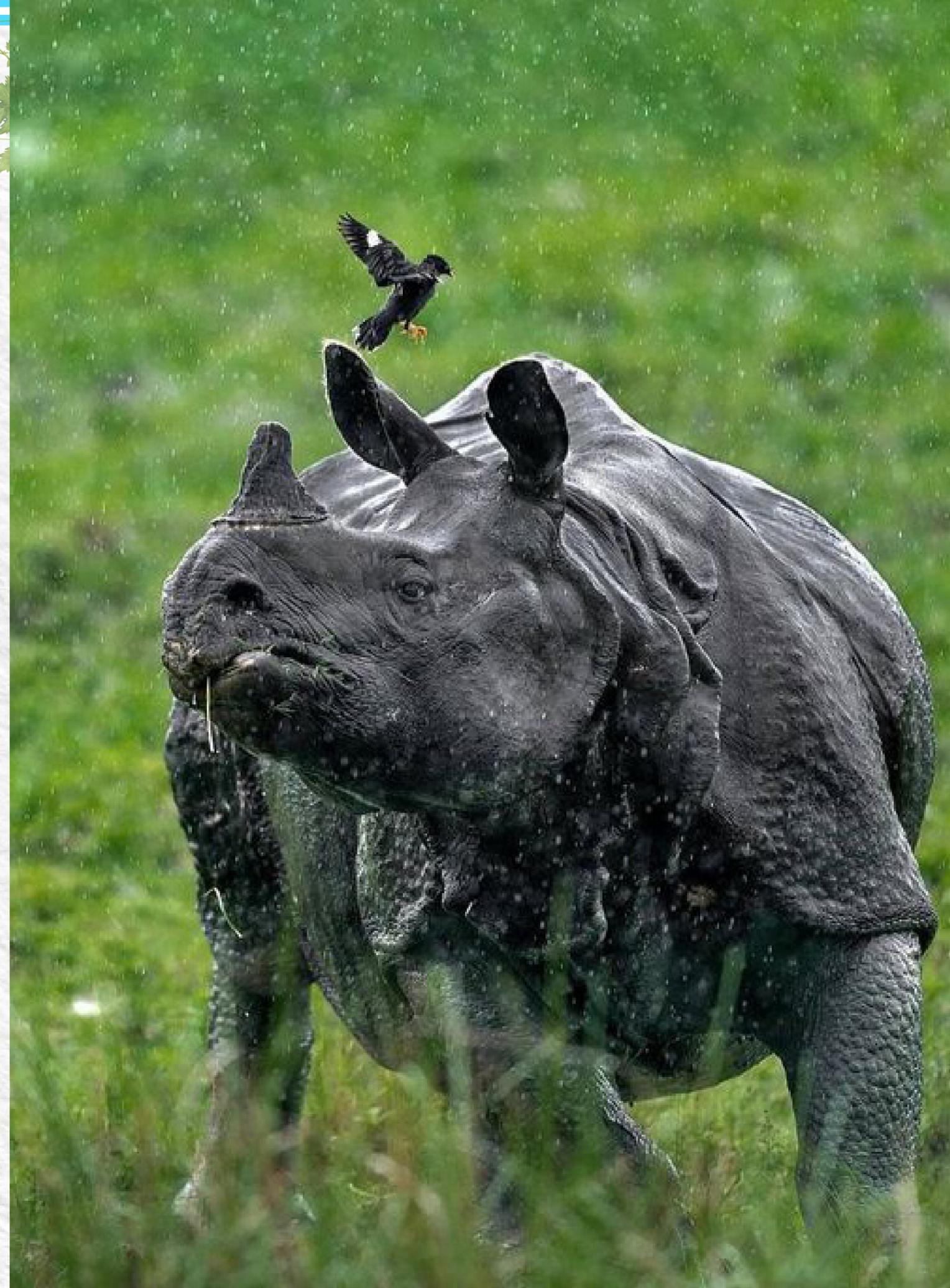
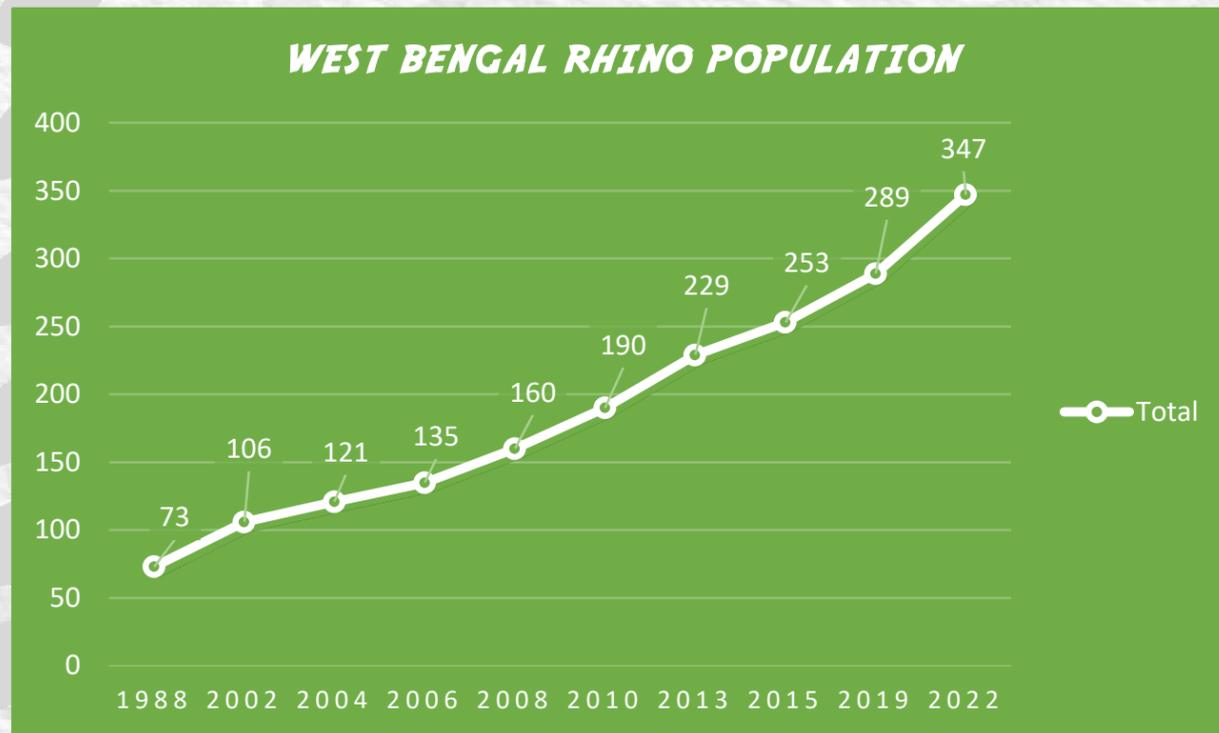
The Rhino population estimation exercise – 2022 and its subsequent statistical analysis have validated the successful management principles in vogue and also thrown up many management challenges. In Jaldapara National Park, the





over increasing population is finding new habitat more and more towards chilapata and kodalbasti ranges. There is also a scope to increase the habitat of Rhino to Northern Torsa flood plains which is north of NH 31C. The Rhino extension to newer areas presents protection challenges and necessitate adequate infrastructure and sufficient man power. Habitat improvements viz. weed eradication, cut back, over wood removal over new areas need to be adopted for providing good quality habitat to rising Rhino population. From genetic point of view, new blood needs to be introduced from

different landscape to avoid in-breeding. Considering the management aspect of population estimation of Rhinoceros and also four (04) years periodical population estimation of Elephant and large carnivores it is suggested that the next population estimation of Indian Rhinoceros in North Bengal landscape is to be carried out after Four (04) years i.e. during 2026. Use of GPS, digitized maps, digital data sheets etc. are to be used instead of hand held paper maps and data sheets.







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