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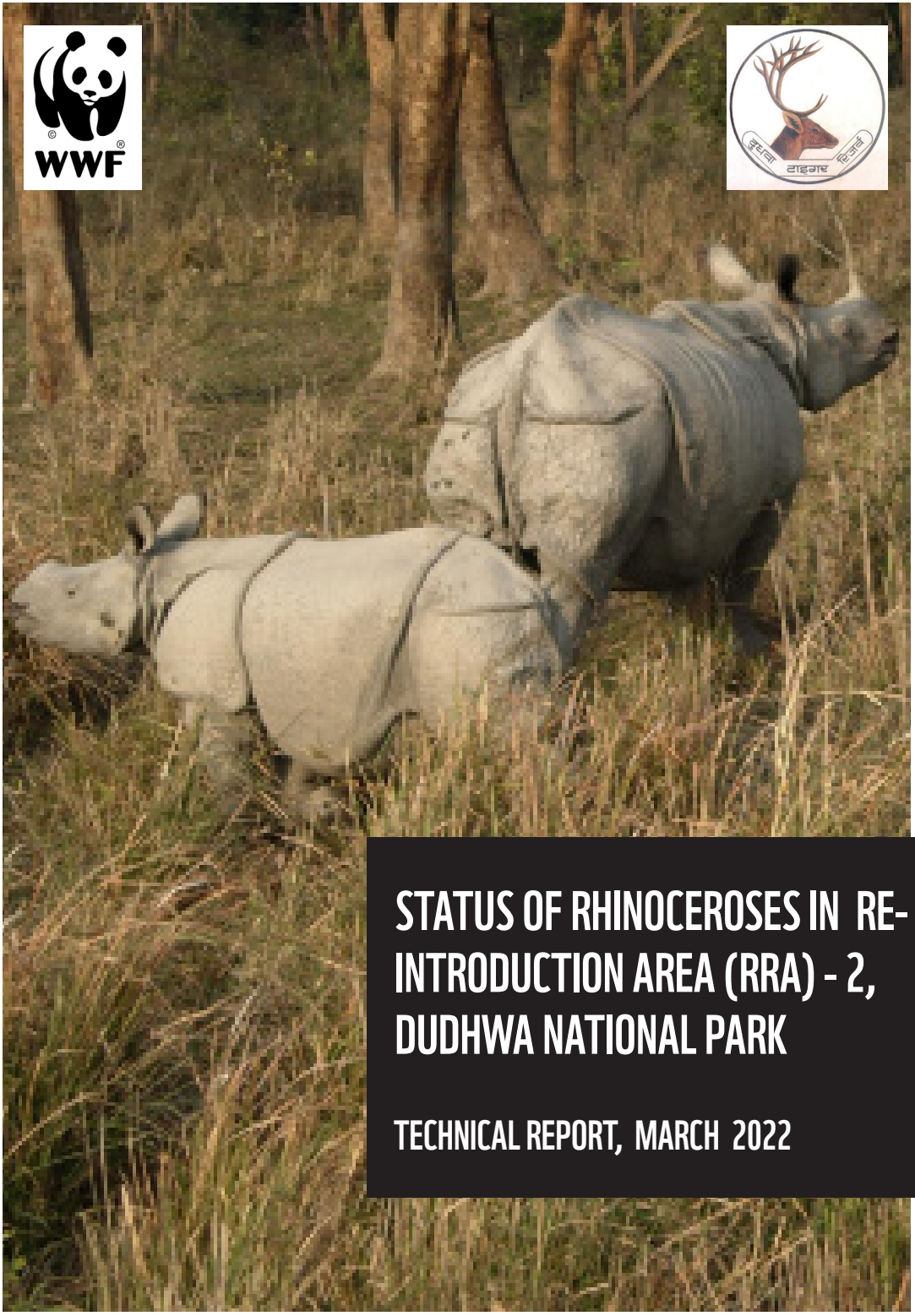

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Rohit Ravi, Mudit Gupta, Sanjay Pathak, Manoj Kumar Sonakar and Amit Sharma

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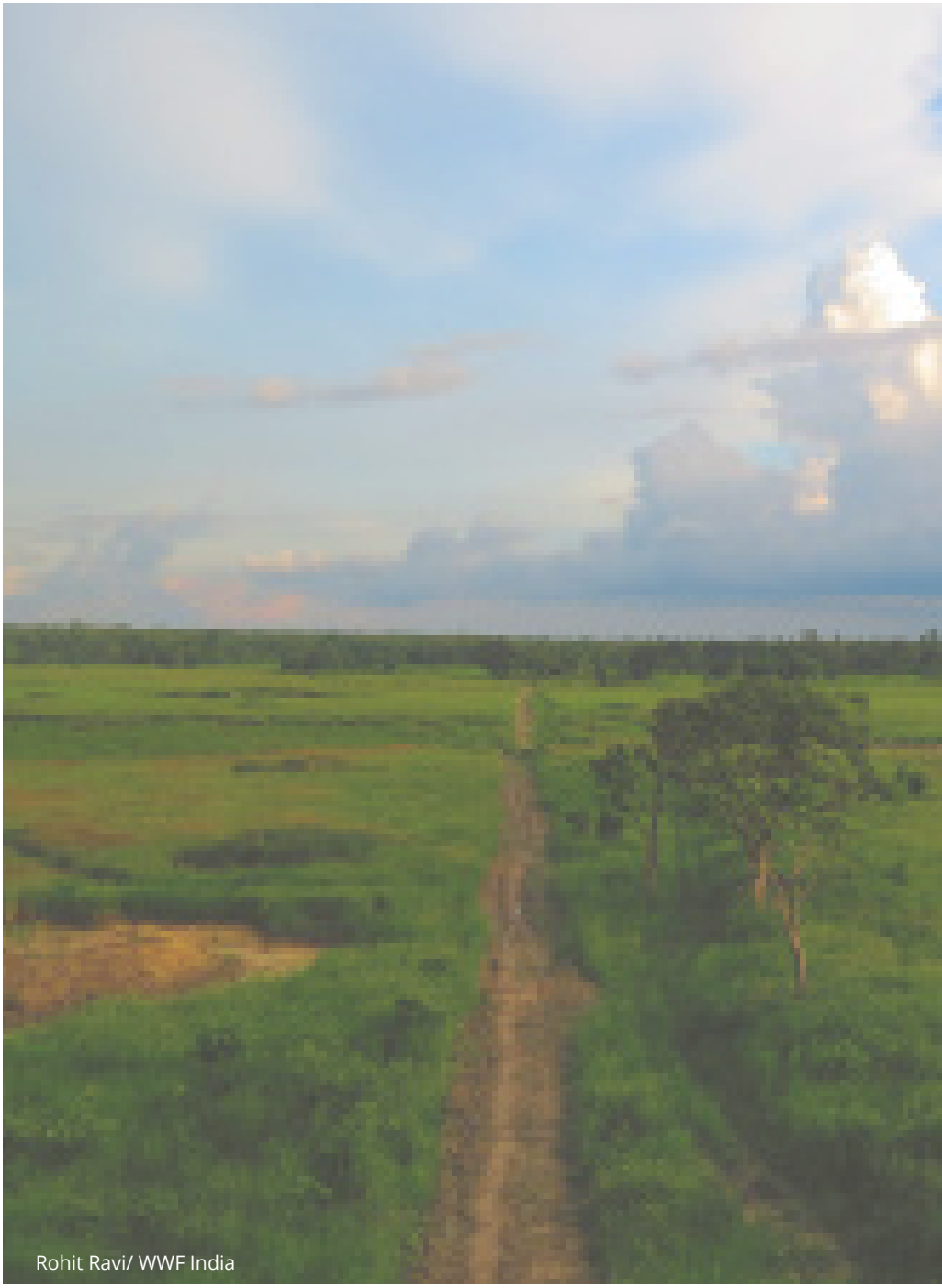

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CONTENTS

ACKNOWLEDGEMENT

The successful translocation of four rhinos in the Rhino Re-introduction Area-2 (RRA2) in Dudhwa Tiger Reserve followed by the settling of this population has paved theway for range expansion of this magnificent and vulnerable species in the state of Uttar Pradesh. It took the vision, will and hard work of several officials from the Uttar Pradesh Forest Department, WWF-India and other organizations to realize the plan of setting up of a second rhino population in the state.

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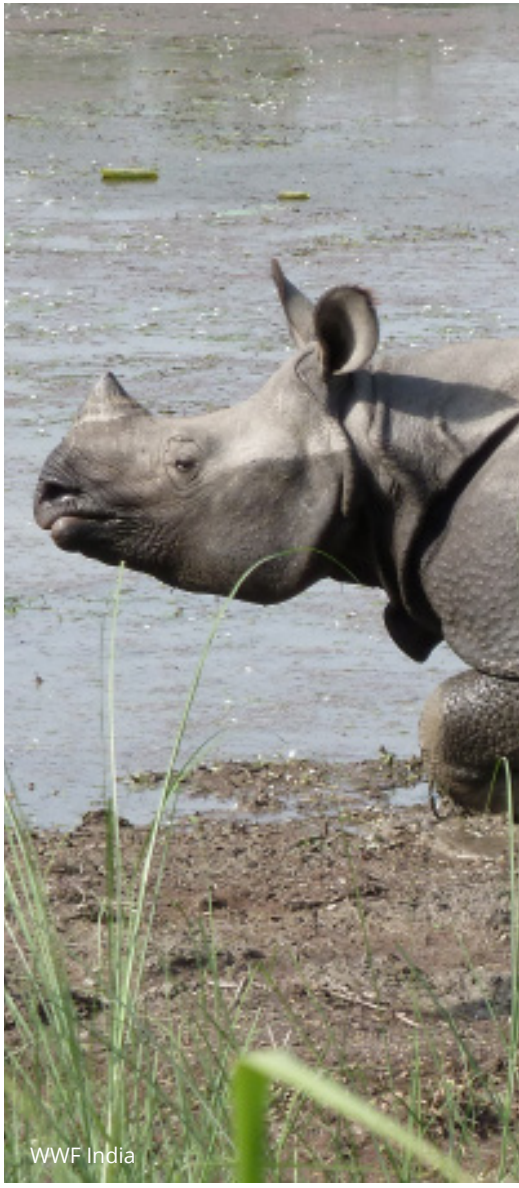
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We are grateful to Mr. Ravi Singh, Secretary General & Chief Executive Officer for his constant support and motivation and Dr. Sejal Worah, Program Director for all the necessary support. We are thankful to the Wildlife and Habitats team specially Dr. Dipankar Ghose, Director, Wildlife & Habitat, and Mr. Yash Shethia, Director, Wildlife Landscapes for their constant support. Thanks to all our colleagues in the Terai Arc Landscape led by Dr. Anil Kumar Singh, Team Leader without whose support the administration and execution of this program would not have been possible. Dr. Parikshit Kakati from WWF-India BHL team needs to be specially mentioned for his constant support at times of need especially on veterinary-related aspects.

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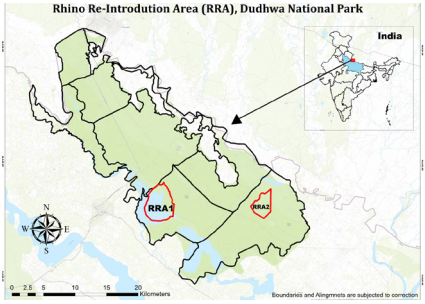
INTRODUCTION

The Dudhwa Tiger Reserve comprises of three forest divisions namely Dudhwa National Park, Kishanpur Wildlife Sanctuary and Katerniaghat Wildlife Sanctuary. The Dudhwa National Park (28°30'30" N, 80°40'48"E) has an area of 680 sq.km in Lakhimpur Kheri district of Uttar Pradesh. It has a number of large wetlands and alluvial grasslands. Historically, this park was famous for its sal timber, and later as a hunting ground.

The Kishanpur Wildlife Sanctuary (28°24'00.72"N, 80°22'01.2"E) falls within Gola tehsil in Lakhimpur district. Located on the southern side of Sharda River it covers an area of 227 sq.km. This sanctuary is connected to Pilibhit Tiger Reserve in the north and to the south is the Kheri Forest Division. A unique geographical feature of this forest complex is its narrowness and the lack of a well-defined core area insulated from human activity. The sanctuary forest is a mosaic of grassland, sal and planted teak forests. The major attraction here are herds of swamp deer (Barasingha). Along with this the habitat is shared by tigers, leopards, fishing cats, jungle cats, sloth, bears, while prey species include the chital, sambar, hog deer, barking deer, nilgai and wild pigs.



The Katernighat Wildlife Sanctuary is located along the India-Nepal border in Bharaich district. The Karnali river flows through Nepal's Bardia National Park to enter Katerniaghat at its northwest corner as the Girwa river. The Khata corridor is a narrow, linear path of riparian forest along the Karnali river in Nepal, and connects Bardia National Park with Katerniaghat.

It serves as a conduit for the movement of tigers, Gangetic dolphin and gharial, both of whwich are found in Girwa river. The Katerniaghat range has riparian forests and flood plains dominated by bombax and acacia tress that grow in the grassland areas. There are extensive tracts of cane as well. The central portions of Katerniaghat are dominated by Shorea robusta, Terminalia alata and Mallotus phillipensis. By contrast, the eastern ranges of the sanctuary are dominated by teak plantations and mixed deciduous forests with lower prevalence of sal.

Dudhwa National Park (DNP) (N: 28.3000 to 28.7000; E: 80.4667 to 80.9500) also located in the Lakhimpur Kheri district has a number of large wetlands and alluvial grasslands. DNP constitutes a major portion of core/critical tiger habitat area of Dudhwa Tiger Reserve (DTR) which spreads over an area of 490 km2. DNP is also famous for its population of the Greater One-Horned Rhino (Rhinoceros unicornis), first reintroduced during 1984-85 in an enclosure in the Suheli floodplains and still contained there.

Since the time of reintroduction, the rhino population in Dudhwa has demonstrated a positive growth trend. Latest records of August 2021 show the population currently stands at 42. Even though their population is growing steadily, they face a risk of inbreeding as it was observed that there was only Banke as the dominant male within that enclosure till it died in 2017.

To allow better growth opportunities and facilitate intermixing of genes, it is imperative to allow rhinos to range freely. However, to allow free ranging, the Protected Area has to be prepared in all aspects, primarily in terms of security, as the rhinoceros is a protection-dependent species. Till that happens, a strategic decision was taken to reintroduce a few rhinos to a second enclosure in a different area to allow better growth opportunities and creation of a separate family tree. The second enclosed area for reintroduction of the rhinos was developed in the Bhadi block of the Belrayan range of DNP over an area of 14 sq.km.

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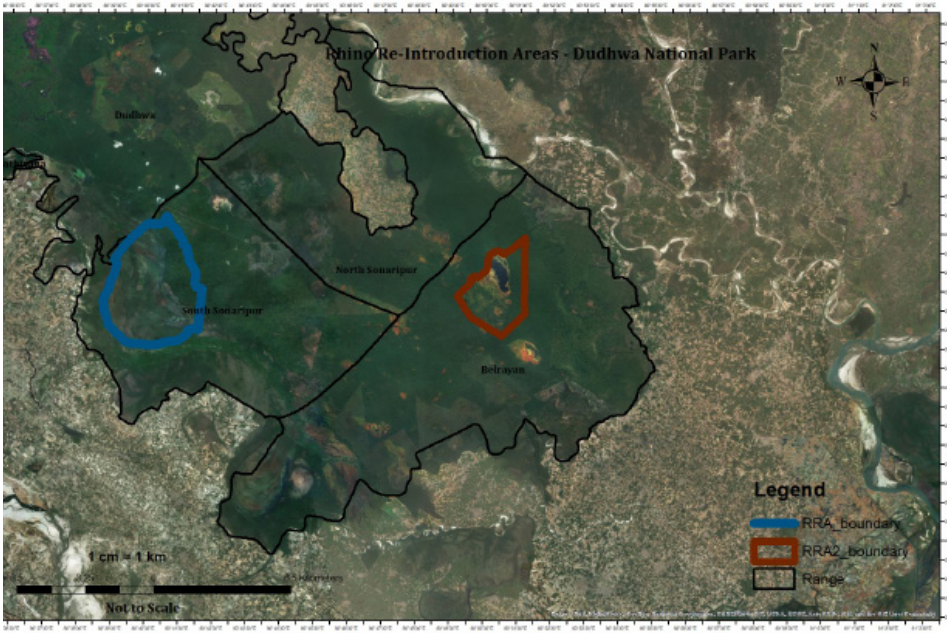

RRA's of DTR

Once everything was in place on the second site, a specialized team was formed for executing the rhino translocation, which consisted of pre-capture monitoring, capture and release preparations and operations, and post-release monitoring. Through extensive monitoring in the RRA-1, potential individuals for capture were identified. Four rhinos in the ratio of 1:3 (male: female) were successfully captured in RRA-1 and translocated to the RRA-2 during April 2018. In September 2021, the population in RRA-2 has grown to 6 rhinos. Even though all the 3 female rhinos gave birth during 2021, one calf was lost on account of accidental death by drowning. To understand the adaptation and health condition of the individual rhinos, it is necessary to put in place a proper monitoring mechanism. In this case, since the time of release, the rhinos were monitored regularly. This document presents the observations and findings from the adaptation process of the rhinos translocated to RRA-2.

Photo 1 - Team monitoring Rhino on elephant back

THE MONITORING

Translocation as a management exercise is a cyclical tool that needs monitoring of different aspects to learn, disseminate and adapt for future actions. In this case, monitoring was designed to understand the post-release behavior of the individual rhinos, their adaptation and health as well as population dynamics.

Monitoring of the individual rhinos is done using the Unique ID system (IUCN AsRSG) based on physical parameters — the profile of each rhino was created for this purpose. Each rhino individual was identified based on its unique physical signatures and during the time of capture all the individuals were ear notched. The staff are trained and skilled to recognize physical features of any individual rhino (Annexure2).

The rhinos are monitored by the forest staff from atop elephants and in vehicles. Usually, monitoring is done during the morning when elephants access the grassland and wetland areas. Monitoring by vehicle is primarily done along the peripheral roads at different times of the day. Once any rhino is observed during the transects and patrols, the staff tries to identify the individual, and record different observations like time, location, activity, etc. as per a pre-designed format in a register. The data generated is compiled and archived at the divisional headquarters. In addition to the routine monitoring, at times when accessibility or visibility becomes an issue, camera traps and drones are also used to monitor these individuals.

Photo2 – Rhinos in RRA-2, Dudhwa- Devendar Kumar

DISCUSSION: The findings presented here are based on more than 1,100 observations recorded since the time of release of the rhinos into RRA-2 during April 2018 till the month of August 2021.

RANGING PATTERN

Four adult rhinos were captured in RRA-1 of Dudhwa NP and released in the present area, RRA-2 from 10th April to 14th April, 2018 (Table1).

Rhino ID	Sex	Approx. age	Date of Release in RRA2
Kalpana	F	9 -11 yr.	10.04.18
Napoleon	M	6-10 yr.	11.04.18
Hemangini	F	12-15yr	11.04.18
Rohini	F	8-10yr	13.04.18

Since the time of release in RRA-2, the male rhino was observed as preferring to range close to the release location, mostly using a small waterhole. The male during the first few days of its release preferred to remain isolated from the female rhinos and this behavior was exhibited by him even in RRA-1, prior to getting translocated to the new area. On the contrary, the female rhinos after their release in RRA-2 were mostly observed to stay associated, close to one another within a radius of around 200 metres.

This pattern of ranging where the male was observed to be mostly maintaining distance from the females and mostly using the southern parts was observed for the initial period of around 45–60 days. After this initial period, the rhinos were seen exploring areas away from the release location. The male rhino was also observed associating more frequently with the females. Since their release in 2018, the rhinos mostly used the grassland areas around numerous waterbodies and the average home range was found to be around 6 sq.km.

Rhino Name	Home range km2	No. of observations
Kalpana	6.41	326
Napoleon	6.22	300
Hemangini	6.39	250
Rohini	6.38	230


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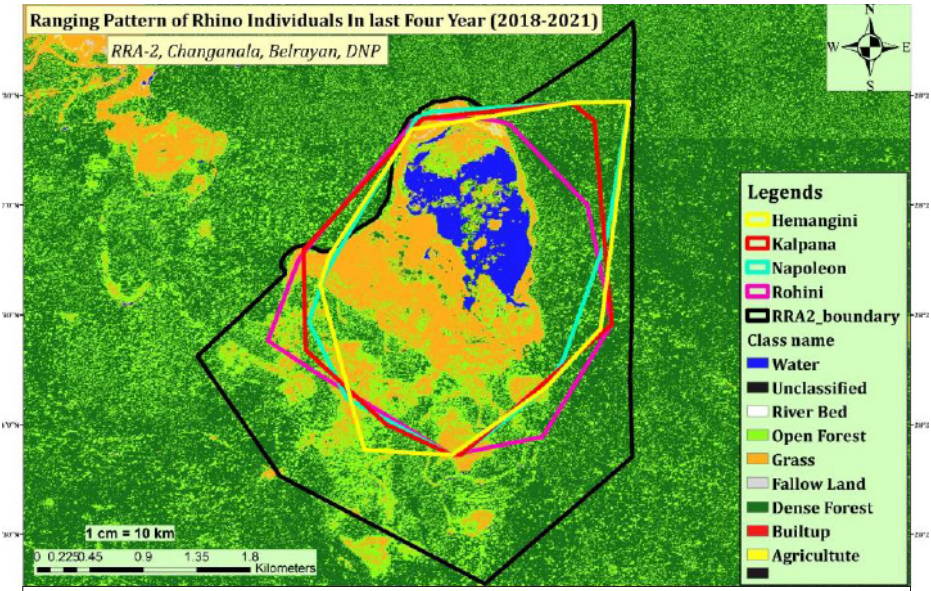
Over the years, even though no drastic variation was observed in the area used by the rhinos inside RRA-2 (Table3), it was seen that the rhinos' home range varied between 3.15 sq.km to a maximum of 4.97 sq.km i.e. variation of around 36%. Seasonally, it was observed that as some water bodies turn dry, especially during March to August every year, the rhinos stayed mostly confined to the area with water availability. The rhinos use a larger area immediately after the rainy season when there is ample availability of water all across the enclosed area.

Rhino	2018	2019	2020	2021
	Home range (km2)	*Home range (km2)*	*Home range (km2)*	*Home range (km2)*
Kalpana	4.81	4.09	3.65	4.28
Napoleon	4.97	4.19	4.18	4.45
Hemangini	4.01	3.69	3.15	4.5
Rohini	3.66	4.43	4.44	3.46



Map1 - Home range of the rhino individuals (2018-21)

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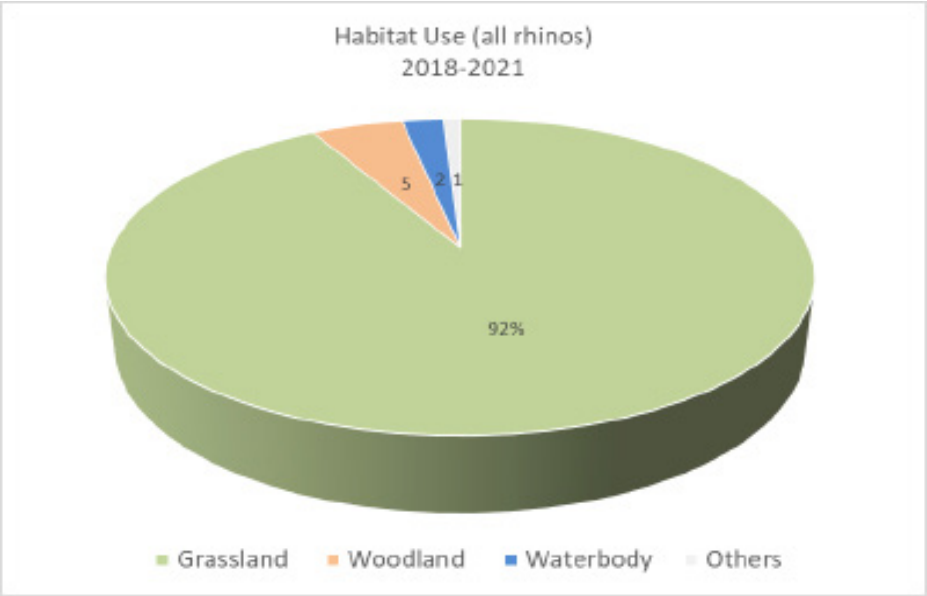

Figure 1 - Habitat use pattern of the rhino individuals

BEHAVIOUR AND HABITAT USE

As part of routine monitoring, the team also recorded the activities of individual rhinos in addition to its location specifics. Most of these findings are from observations made during the morning hours. Of total observations (1,106) recorded from April 2018 to August 2021, the sighting of all individual rhinos was mostly in the grasslands. The rhinos were sometimes also observed to be using other habitats like woodlands and wetlands. It was found that the rhinos were mostly in an active state, either moving or feeding. In addition, they were observed to be taking rest/sleeping followed by wallowing. Seasonally, some changes in the activity pattern were observed; the rhinos moved around more during the winter months compared to spending longer time on feeding and resting in the summer months.

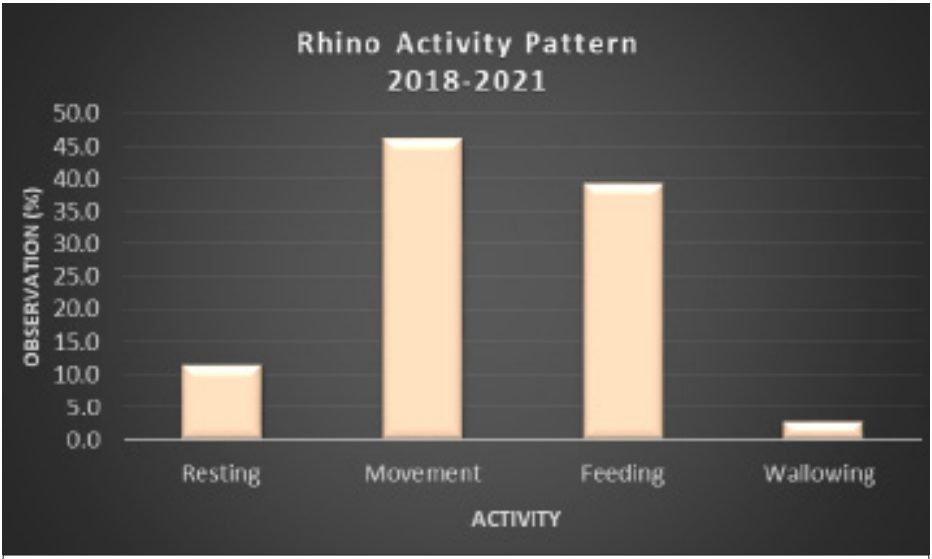

Figure 2 – Activity pattern of individual rhinos

BREEDING RECORD

The rhinos were translocated to a new area to provide a chance of better growth and improve their genetic diversity. The first sign of successful breeding in this area could be confirmed after a long wait of 34 months. This is probably linked to the observation that it took time for the male to associate with the females after they were reintroduced in this new area. The birth of the first calf was recorded in this enclosure in February 2021. However, the celebration was short-lived as this calf was detected to have died in an accidental drowning. Two more calves from the other females were detected inside RRA-2 in June 2021 bringing joy to all involved in the conservation of the rhinos in Dudhwa Tiger Reserve.

CONCLUSION

As has been evident through several operations in the country, reintroduction is one of the most important tools for conservation of a species. Rhino reintroduction in Dudhwa NP in Uttar Pradesh has been one of the most successful reintroduction and rehabilitation exercises, not only in the country but globally.

The new rhino population in a new area has extended the natural distribution of the species. The birth of three rhino calves indicates that the rhinos have successfully adapted to the new habitat, thereby underscoring the achievement vis-a-vis establishing a vulnerable species in the wild.

The monitoring of the rhinos needs to be continued as a regular exercise to aid necessary management and decision making as found appropriate from time to time. The grasslands and wetlands have to be appropriately maintained so that rhinos continue to enjoy their natural habitat. The, possibilities of releasing the rhinos into the wild to make them free-ranging out of enclosure areas should also be explored.

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ANNEXURE 1

Photo3 - Camera trap photo of Kalpana with her calf

01

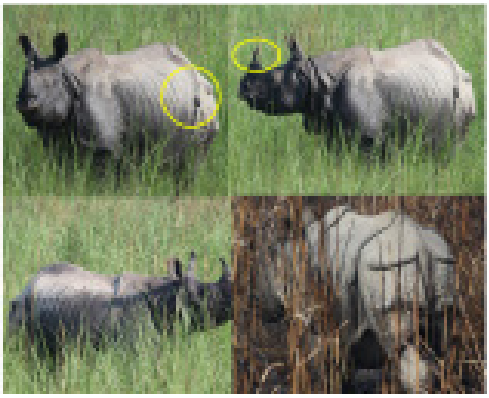
Photo4 - Camera trap photo of Rohini with her calf

02

Photo5 - Camera trap photo of Hemangini with her calf

03

ANNEXURE 2



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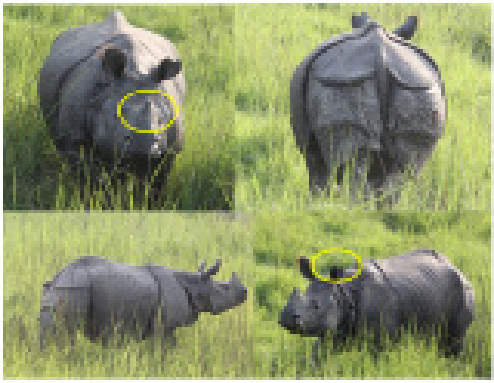

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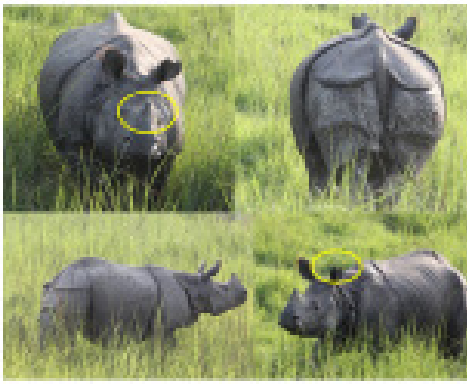

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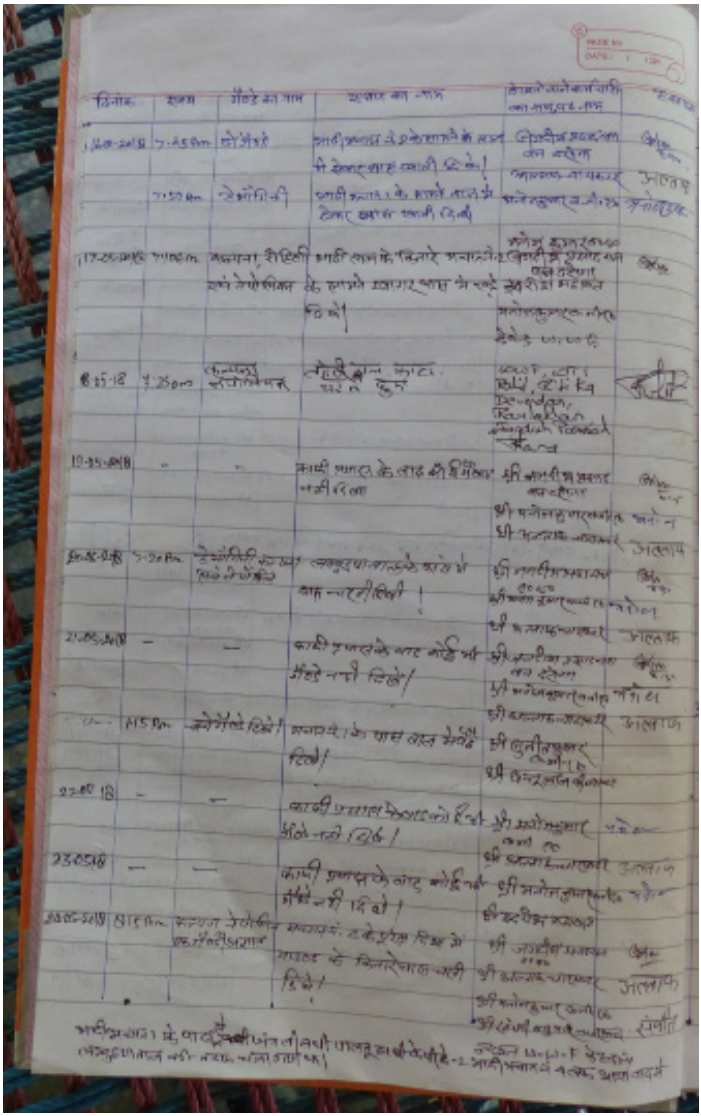
ANNEXURE 3



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