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DO THESE TRACTS HOLD POTENTIAL FOR RHINOS?

**A PEEP INTO HASTINAPUR WILDLIFE SANCTUARY
AND JHILMIL JHEEL**

TECHNICAL REPORT

SEPTEMBER 2020

WILDLIFE & HABITATS PROGRAMME, WWF-INDIA





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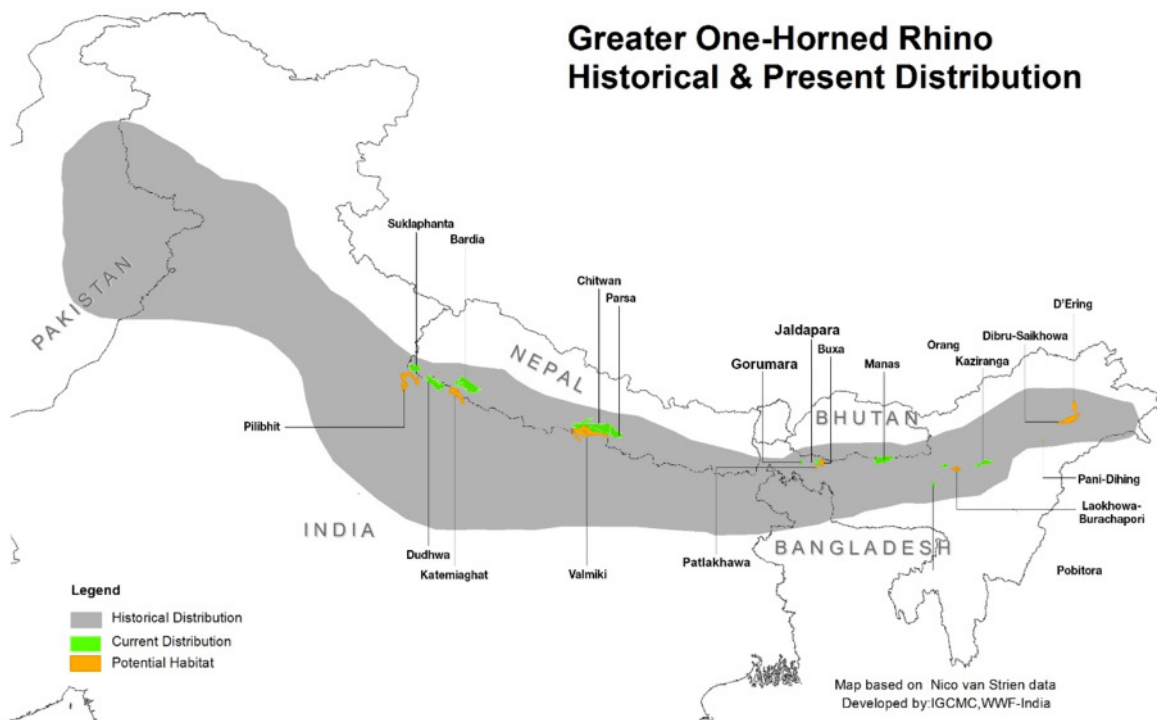
We wish to acknowledge the efforts of our colleagues from the Rivers, Wetlands and Water Policy Programme especially Mr. Suresh Babu, Mr. Sanjeev Yadav and Mr. Shanawaz Khan who provided with all the necessary support during the field trip. Special thanks to all our colleagues from WWF India Secretariat and the TAL team especially, Dr. Dipankar Ghose, Dr. Anil Kr. Singh, Dr. Mudit Gupta, Mr. VS Tomar, Mr. Ashish Bista and Mr. Rohit Ravi who have helped in accomplishing this work. The mapping has been done with help from the IGCMC programme. We are grateful to Dr. Samrat Mondol and the team from Wildlife Institute of India for sharing vital information on the connectivity between Hastinapur Wildlife Sanctuary and Jhilmil Jheel through Heiderpur wetlands. This information was provided based on the study on radio-collaring of swamp deer done in these tracts to understand the ranging and seasonal migration of the species in this complex.

A special thanks to Mr. Ravi Singh, SG & CEO of WWF-India for his encouragement, motivation, and guidance for undertaking this field assessment and completion of this documentation.

BACKGROUND

Hastinapur Wildlife Sanctuary in the state of Uttar Pradesh is on the flood plain of the river Ganga and adjoining the Delhi National Capital Region. It is recognized as a sanctuary with immense potential for conservation. It has some of the last standing rich patches of grasslands along with a mosaic of wetlands along the river Ganga. The area also offers connectivity towards the north up to the Jhilmil Jheel and beyond in Uttarakhand. The area is a priority conservation area recognized by the Uttar Pradesh forest department and identifies it as a potential site for rhino reintroduction.

WWF India identified the richness and potential of the area extending from the Hastinapur Wildlife Sanctuary in Uttar Pradesh to the Jhilmil Jheel conservation area in Uttarakhand. The Rivers, wetlands, and water policy programme of WWF India is actively working in the PA for the conservation of the Ganga and the aquatic species in partnership with the Government and the local communities. Following various discussions, in August 2019, a team from the Wildlife and Habitats Division of WWF India visited the Hastinapur WLS and the Jhilmil Jheel area for a rapid assessment. All possible sites of the identified complex were visited in consultation with the forest officials, locals of the area, and the members of the water division located in the area, the findings of which are captured in the report. Major wetlands, woodlands, and grasslands of the Hastinapur WLS, Haiderpur (Muzaffarnagar FD), and Jhilmil Jheel visited during the present survey.



Map 1: Geographic range of the GoH rhino (historical and present)

Previously, during a meeting in April 2017, the Uttar Pradesh Forest Department decided to conduct assessments of the Hastinapur WLS as a potential habitat for rhinos. Earlier, during a meeting in April 2017, the Uttar Pradesh Forest Department decided to do assessments of the Hastinapur WLS as a potential habitat for rhinos. The decision was taken after a team that led a survey of the Heiderpur area in 2016 recommended that rhino reintroduction possibilities should be explored.

“All along the edge of the Himalayas, from the Saharanpur and the Jumna River in the north-west to Gorakhpur and the Gandak River to the east, is a belt of forest varying in width from twenty to fifty miles, which is home to many species of animals,” wrote by Col. R.W. Burton in his diary in 1924 (Troovey 1987).

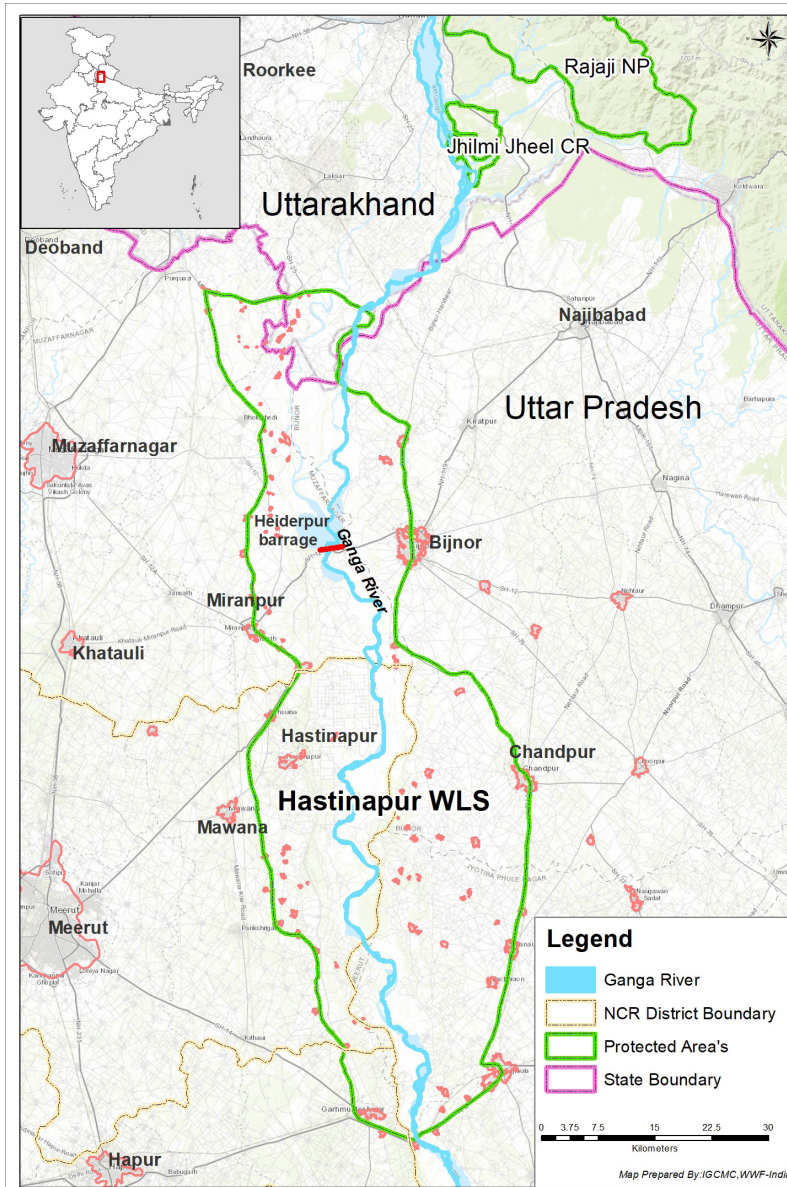
Even though now, the Greater one-horned rhinoceros (*Rhinoceros unicornis*) are restricted to a few isolated pockets in India and Nepal, it was historically distributed all along the Indus-Ganges-Brahmaputra valley including the Terai and Bhabar zones of the Himalayan foothills. There was a record of rhinoceros’ sighting near Kotdwar town on April 20, 1789 (Rookmaaker 1999), which is now in Uttarakhand. The nearest population of the one-horned rhinoceros from the study complex is found in the Dudhwa National Park of Uttar Pradesh, which was reintroduced way back in 1984. Even though rhinos were once found ranging in the area, it got locally extinct, and a reintroduction program has helped revive the population to around 38. Habitats similar in types to that found in Dudhwa are also reported from the Hastinapur WLS, which lies along the river Ganges in the western part of Uttar Pradesh and is being presumed that the area can help revive a small population of rhino within India.

PRESENT STUDY

Rapid field surveys of the complex were carried out in in the Hastinapur area by a team from WWF-India and Uttar Pradesh Forest Department and the Jhilmil Jheel conservation area by a team from WWF- India and Uttarakhand Forest Department from 27 August 2019 to 30 August 2019. During the field visits, forest officials and staff posted in the area were also consulted.

OBJECTIVE

This study's objective was to assess the potentiality of the habitats in the Hastinapur – Jhilmil Jheel complex for the re-introduction of the one-horned Rhinoceros.



Map 2 : Location reference of the complex

STUDY AREA

HASTINAPUR WILDLIFE SANCTUARY

Hastinapur WLS was notified vide letter no. UP Govt. van anubhag-3 G.O. No. 3782/14-3-5-7/84 Lucknow dated 30.7.1986. Administratively, the sanctuary comes under five districts namely, Meerut, Muzaffarnagar, Hapur, Bijnor, and Amroha. The sanctuary is located between latitudes N 28° 46' to N 29° 35' and longitudes E 77° 30' and E 78° 30'. The total area of the sanctuary is 2073 km² (Khan et al., 2013). There are more than 600 villages inside the sanctuary boundary and the district-wise spread are summarised as follows:

SN	District	Range	Area (km ²)
1	Meerut	Hastinapur, Parikshitgarh	54.49
2	Muzaffarnagar	Jansat, Morna	25.99
3	Hapur	Garh	5.93
4	Amroha	Dhanaura	61.23
5	Bijnor	Chandpur	38.62
6	Bijnor	Bijnor	1886.74
Total			2073.00

HAIDERPUR WETLAND

Haiderpur wetland is a floodplain wetland of River Ganga located within the Hastinapur WLS managed under Jansat and Moranga ranges of Muzaffarnagar social forestry division and Bijnor range of Bijnor social forestry division. This wetland got formed in 1984, as an outcome of the construction of the 'Chaudhary Charan Singh Madhya Ganga barrage' at the confluence of river Ganga and its tributary, Solani. This site is rich in native wetland vegetation and provides habitat to key fauna. The wetland provides home to 234 bird species and around 90 migratory species are documented to be visiting the wetland annually. Globally threatened species such as black-necked grebe, black-bellied tern, sarus crane, Indian skimmer, common pochard, lesser white-fronted goose, woolly-necked stork, Indian spotted eagle, greater spotted eagle, tawny eagle, imperial eagle, swamp deer, otters, gharial and hog deer inhabit the wetland. Haiderpur also supports 3% of the bio-geographic population of grey lag goose (south Asian non-breeding) and 2.82% of the bar-headed goose (central, south and Southeast Asia). Haiderpur wetland also supports the water requirements and livelihood of the local communities by contributing towards the flows and water balance in the catchment.

JHILMIL JHEEL

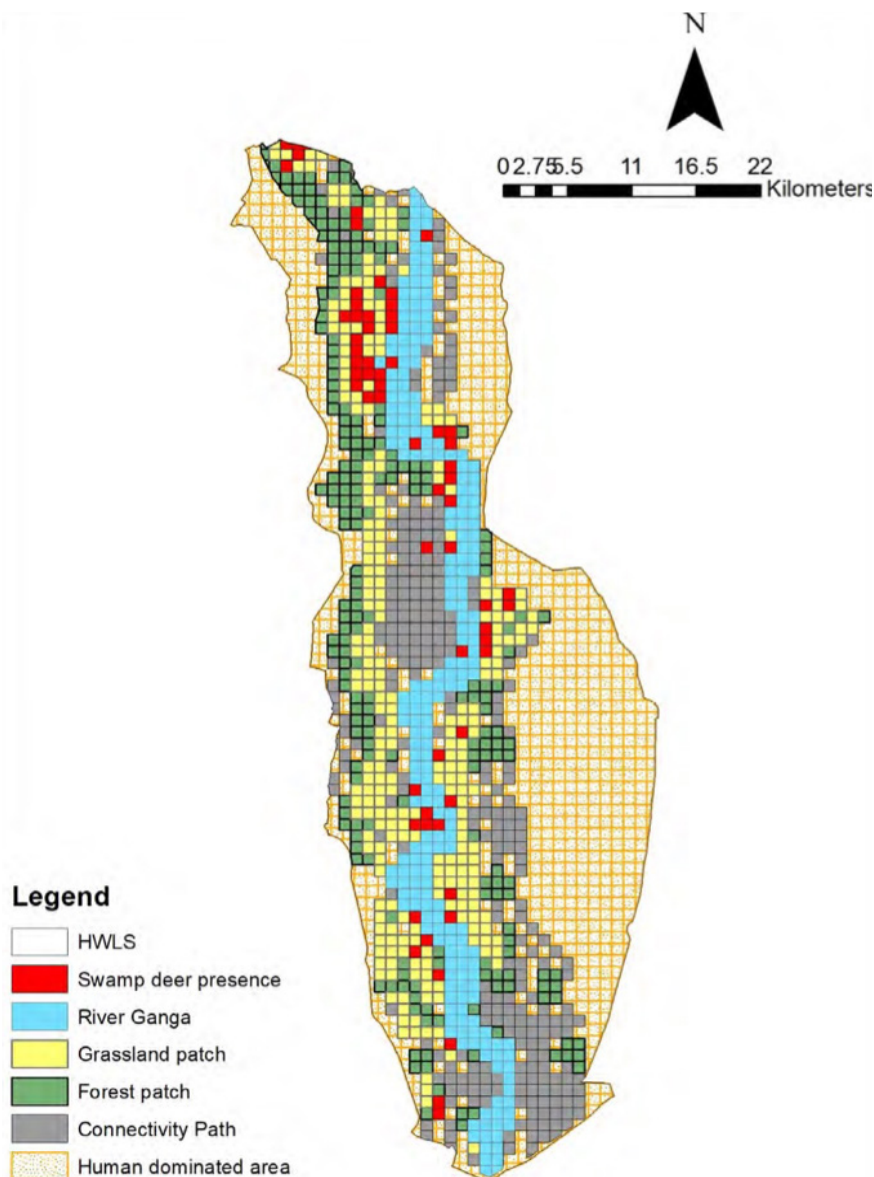
Jhilmil Jheel extends between N 29° 32' to 29° 50' and E 78° 10' to 78° 15' and comes under the Haridwar district of Uttarakhand and is under the management Haridwar Forest Division. On 5 August 2005, the Government of Uttarakhand declared Jhilmil Jheel as a

Conservation Reserve vide notification number 2415 (1) / 10-02-2005-21 (5) / 2005. The Jhilmil jheel Conservation Reserve is primarily a mosaic of swampy grassland, water body and woodland with an area of approximately 37 sq km area. The altitude varies from 200 to 250 m above. Geographically, this site is located in the junction of the terai and bhabar formation primarily on the eastern bank of the river Ganges. This site came into prominence after the swamp deer got recorded in 2005 (Sinha et al. 2007). This area is rich in flora and fauna, and some of the important grasses found in the area are *Typha elephantina*, *Phragmites karka*, *Imperata cylindrical*, and *Vetiveria zizinoidea*. Major fauna includes tiger, leopard, leopard cat, jungle cat, elephant, chital, sambar, muntjac, swamp deer, rhesus and langur. Closest human habitation to the site is Tantwala with approximately 147 households and Gujjar deras potentially posing a threat to the habitat because of anthropogenic pressure such as cattle grazing on the jheel and surrounding forest.

KEY TAKEAWAYS FROM MEETINGS, INTERACTIONS AND FIELD OBSERVATIONS

As a part of this study, a detailed discussion with the Divisional Forest Officers of Meerut and Muzaffarnagar (Uttar Pradesh), and Divisional Forest Officer of Haridwar (Uttarakhand) and WWF India was organised. Discussions with the Range Forest officers and other forest staff of the two states were done during the field survey. The WWF India team also consulted Dr. Samrat Mondol and his team of researchers from Wildlife Institute of India who has been working on swamp deer in the area. The team covered the complex as extensively as possible depending on the field conditions during monsoon. The broad points to be noted includes –

1. The Forest Department officials of both Uttar Pradesh and Uttarakhand have considered this particular complex as a potential habitat for rhino reintroduction.
2. The forest departments have gaps in terms of human resources and infrastructure, especially in the Hastinapur WLS.
3. The Divisional Forest Officers of the two divisions of Hastinapur WLS believe that there is scope for preparing the complex for rhino re-introduction. However, a robust plan must be put into place including components for settlement of the boundary and the numerous human dominated areas / villages / townships, to prepare the area.
4. There are few good grassland and wetland patches in the entire complex.
5. The Haiderpur wetland has a good presence of bird and wildlife. The area has the potentiality to be taken up as a model site for species and wetland conservation within Hastinapur WLS
6. Man-animal conflict can become a major issue with the introduction of a species like the rhino if not adequately planned and managed. The people are not aware of the species to be existing in the area.



Map 3: Composite character of the Hastinapur WLS (Courtesy – WII, 2019)

7. The presence of species like the swamp deer and leopards are quite common in the complex; however, poaching is not recorded in high numbers.
8. The river Ganga flowing through the complex is the lifeline for the area, it needs to be scientifically managed and both the banks secured for the free use of wildlife.
9. The study by WII on the swamp deer indicates that this species has patchy distribution throughout the complex, mostly in the grasslands. There is an indication of movement from the northern parts, i.e., from Jhilmil area towards the central parts of the Hastinapur Wildlife Sanctuary in the south.

OBSERVATIONS FROM THE FIELD VISIT

1. The Hastinapur WLS is facing tremendous pressure due to massive development projects and urbanization witnessed in that region. The proposed boundary of the Delhi National Capital region is extending up to the WLS, and this is likely to create additional pressures on the land resources. There are multiple urban centres around the WLS, and their expansion is expected to have an impact. However, the proposed land-use map for Delhi NCR for 2021 identifies the WLS area as a Natural Conservation Zone. This provides the scope for conservation and better management of the area.
2. The boundary of the Hastinapur WLS is not adequately settled and demarcated. Numerous settlements are observed within the present boundary of the WLS complex.
3. The habitat inside the WLS is a complex mosaic of grassland, swamps, wetland, forests, agriculture, and settlement. The woodlands are on relatively higher lands locally known as “khola” and the major trees seen include *Syzigium cumini*, *Haplophragma adenophyllum*, *Dalbergia sissoo*, *Eucalyptus* sp., *Acacia nilotica*, *Holoptelia integrifolia*, *Adina cordifolia*, *Terminalia arjuna*, *Tectona grandis*, and *Cassia fistula*. The swampy grasslands mostly along the river Ganges are locally called “khadar,” and some of the major species seen there included *Phragmites* and *Typha* sp.
4. The swampy grasslands have a right mix of grass species and can be favourable lands for the rhinos, as indicated by the swamp deer’s presence. However, these grasslands are in many locations seen to be converted to agricultural lands making the habitat highly disturbed and patchy.
5. Although the area is affected by floods, it has been noted that the availability of water and the level of water flow is mostly controlled by the release of water from the barrages in and around the WLS. The kholas in the event of high floods can act as temporary shelters for any wildlife in the area.
6. The Jhilmil Jheel area has suitable grasslands along the river however are not big enough to provide long term shelter to large herbivores. This area is connected to the Hastinapur WLS through the river channel and forest patches, as illustrated by the swamp deer movement. However, the connecting area is not within the forest department; therefore, secured and free movement of wildlife will be challenging.
7. The forest infrastructure in terms of the existence of the anti-poaching camps, patrolling road network, patrolling vehicles as well as the workforce in place did not seem quite adequate considering the size and challenges observed in the area.

8. Even though it was learned through the discussions with the senior and field level forest official that wild animals are hunted, we could not find any poaching or wildlife crime records during the visit.
9. The Heiderpur area in and around the barrage seems quite promising as a potential area for rhinos. However, we visited during the monsoon season and found that only minimal grassland areas were not flooded and available for use by wild animals. After that, some adjoining areas were observed to have suitable grasslands and swamps that can be preferable for species like the swamp deer and rhinos.

RECOMMENDATIONS AND CONCLUSION

The Hastinapur WLS and Jhilmil jheel conservation area provides one of the best grassland patches for the conservation of wildlife along the banks of the river Ganga. Despite challenges, there is scope to adopt and execute a plan for the conservation of the complex. The Forest Department, along with the District Administration, is seen to be working in co-ordination trying to work for the conservation of the area with minimum support in hand. The communities seem not to be well connected in terms of valuing the area as a natural resource. It will be critical to ensure their support to aid the conservation of the area and take an ambitious decision of re-introduction of rhinos to that area. The following recommendation is made from this rapid study -

1. The boundary of the Hastinapur WLS should be demarcated appropriately; there are numerous settlement areas inside the PA as observed, and these should be settled under the provisions of the law, especially the Forest Rights Act. Any administrative procedure of the settlement or boundary demarcation should be done in consultation with the target communities and significant stakeholders.
2. The bigger patches of grasslands inside the PA should be identified using the latest satellite imageries, and these should be prioritised for consolidation and management.
3. The connectivity of the Hastinapur WLS with Jhilmil jheel Conservation Reserve should be attempted to be identified, demarcated, and secured. As found necessary, the areas offering this critical connectivity should be attempted to be brought under conservation management to ensure the movement of swamp deer and other wildlife. It is suggested to involve the local communities in the process as their support will be most necessary.
4. The PA has many sites in and around it to be developed as points of conservation and tourism attraction. This will help the area to garner people's attraction and promote biodiversity conservation through the execution of an effective master plan. Some of these potential sites are the Heiderpur wetland, Ganga riverfront, and the Hastinapur archaeological sites. All these can be planned as a tourism circuit that can benefit both the biodiversity and the economy.
5. A systematic assessment of the protection/security in the area should be conducted to address the gaps in the forest department's infrastructure, equipment, and workforce.
6. Even though the area holds potentiality, further detailed assessments will be necessary to confirm the suitability in terms of security and habitat for re-introducing rhinos.

A FEW SNAPSHOTS OF THE COMPLEX



Figure 1: Team with DFO - Muzaffarpur in Haiderpur grassland area



Figure 2: Team members in the Aamsot grassland along the Ganges in Rasibud of Haridwar division



Figure 3: A panoramic view of the Jhilmil jheel area



Figure 4: Habitats within Hastinapur WLS

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