

FIELD NOTE

Dhikala grasslands in Corbett Tiger Reserve, a potential site for reintroduction of the one-horned rhinoceros in India

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The greater one-horned rhinoceros (*Rhinoceros unicornis*), an obligate species of tall grasslands and forest mosaic in the flood plains, was found abundantly across the Brahmaputra, Ganga and Indus river valleys including in Sind Province in Pakistan (Dinerstein 2003). With the beginning of early settlements, most of its original habitats were lost to human habitation and arable lands, and currently only a few isolated patches remain in the Ganga and the Brahmaputra floodplains. Relentless poaching for rhino horn continues to cause serious population decline (Martin 1983) and still presents grave threats for the surviving populations (Foose and van Strien 1997). The latest estimate suggests that only about 2000 individuals are left in the wild, with Kaziranga National Park in India and Chitwan National Park in Nepal together harbouring about 83% of them (Dinerstein 2003). The remaining populations are very small and highly isolated; they include the reintroduced populations in Dudhwa National Park in India and Bardia National Park and Suklaphanta Reserve in Nepal. Extinction risk of large populations confined to few areas and scattered small populations was clearly articulated in the IUCN/SSC Asian Rhino Specialist Group meeting at Bangkok (Schenkel and Schenkel 1979), which essentially signalled the beginning of a past rhino reintroduction programme in India and Nepal (Sale and Singh 1987).

The new state of Uttarakhand in north-west India contains grassland habitats that are potentially suitable for establishing new populations of the one-horned rhinoceros. Sighting of a male rhino near Kotdwara

in this state in 1789 confirms that this rhino occurred here in the past (Rookmaaker 1999). Dhikala and Paterpani grasslands in Corbett Tiger Reserve and Surai grasslands in the Terai East Forest Division provide the last opportunity for the reintroduction programme in this state (fig. 1). However, among these three sites, Dhikala grasslands could be considered the priority because of its size, location and protection status.

Dhikala grasslands

Dhikala grasslands (or *chaur* as they are locally known) cover about 10 km² in the core area of Corbett Tiger Reserve and include Phulai chaur on the Ramganga riverbed, Dhikala chaur largely to the west of the tourism complex, and Kinanauli chaur to its east. These grasslands together with the adjoining forests form 20 km². Given that it is possible to stock one rhino per square kilometre (Sale and Singh 1987), Dhikala grasslands can potentially support a maximum of 15 rhinos. This potential relocation site has the outer Himalayan range to the north, dense extensive Sal forests to the east, Sal forests and Shivalik Hills to the south and the Ramganga reservoir to the west. Hence, the new population would be unlikely to stray out and come into conflict with villagers, and it could be well protected. Plentiful water in the Ramganga River and the reservoir and wallows in the marshy Phulai chaur provide ideal conditions for the rhinos. Also, plenty of food plants for this species grow in the area. The list provided by Laurie (1978) of rhino food plants is exhaustive, with about 180

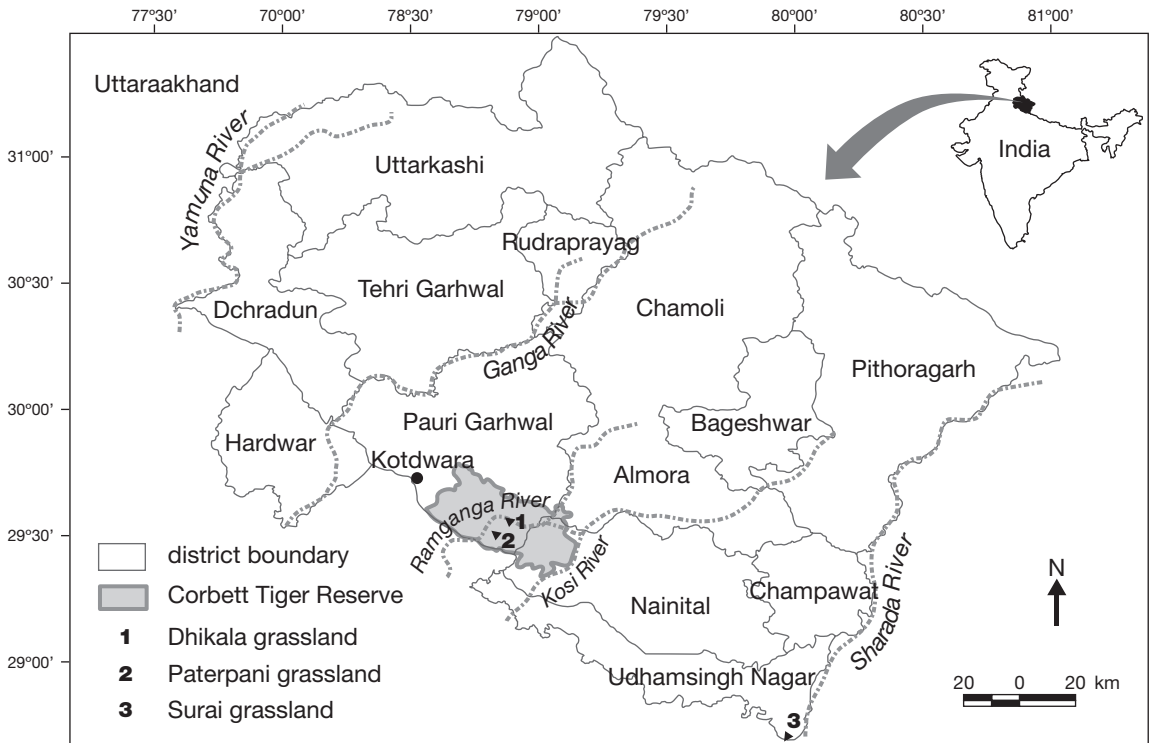


Figure 1. Potential sites for reintroduction of the greater one-horned rhinoceros in Uttarakhand State, India.

species representing 54 families. In these grasslands are found 97 species belonging to 33 families; notably, the graminoids are well represented with 36 (78%) of the 46 species. Dinerstein (2003) lists 10 grass species and 14 browse species as the most commonly eaten food plants in Royal Bardia and Royal Chitwan National Parks. All of these grasses and nine of the browse species are found in Dhikala. Therefore, as mentioned earlier, Dhikala grasslands appear to have all the essential requirements (protection, water, wallows and food) to sustain a small population of rhinos. As was done with the reintroduction programme in Dudhwa National Park, to establish a vigorous breeding nucleus, rhinos could be brought in both from Assam and Nepal. As Sale and Singh (1987) suggest, these rhinos should be young so that they will withstand the rigors of translocation. Of the eight animals translocated into Dudhwa in 1984 and 1985, seven had survived by December 1986 (1 adult male, 5 females, 1 subadult female). With care and planning, the number of animals increased over 20 in 2006. It is possible to establish such a population in Dhikala grasslands.

Paterpani grasslands

Paterpani chaur, with a grassland–forest area of 5 km², is located south of Dhikala grasslands along the Paterpani stream. It can support a minimum of five rhinos. Active management of excess animals that the Dhikala and Paterpani chaur cannot sustain will become vital thereafter. Although the number projected here falls well short of the minimum population size of 50 suggested for a large mammal reintroduction programme (Franklin 1980), the chance of reducing the extinction risk or at the least, prolonging the extinction process, is possible by creating more populations within whatever potential area is available for the species (Caughley and Gunn 1996).

Surai grasslands

The Surai grasslands are small, less than 2 km², located in the Surai Range of Terai East Forest Division on the south-eastern end of Uttarakhand, bordering the state of Uttar Pradesh. Rhino conservation can be planned here only if the Mala-Mohaf grasslands in the adjacent Pilibhit Forest Division of Uttar Pradesh

State are included with them as one complex. This is an extremely challenging task, since it involves two governments with distinct political and socio-economic backgrounds. Further, rhinos reintroduced here, if not protected by an electric fence, would stray into the agricultural fields that border the Mala Range, thus coming into conflict with farmers. The problem of poaching is another threat in this area.

Discussion

Establishing new populations obviously requires careful planning and needs to follow existing legal and ecological frameworks. The guidelines provided by the IUCN Asian Rhino Specialist Group and the Reintroduction Specialist Group, along with the experience gained while reintroducing rhinos in Dudhwa National Park (Singh and Rao 1984) can be used to guide the initiatives. Similar to the Dudhwa rhino reintroduction programme, the entire activity should begin by coordinating and collaborating with appropriate agencies and individuals. A technical committee consisting of forest officers, field biologists, an advocacy officer, experts having prior experience in translocating rhinos, and conservation agencies such as IUCN Specialist Groups and WWF should be constituted. This committee would be expected to accomplish the finer assessment of habitat conditions, and should evolve a microlevel plan before investing much human and fiscal resource towards this programme. If established, the rhino population in Corbett Tiger Reserve is certain to enjoy a secure future. The presence of this large herbivore here, which will make the tall grass habitat more productive by breaking the stands and promoting sprouting, will only be beneficial to other ungulates and will enthrall visitors.

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References

- Caughley G, Gunn A. 1996. *Conservation biology in theory and practice*. Blackwell Science, Cambridge, Massachusetts. 459 p.
- Dinerstein E. 2003. *The return of the unicorns; the natural history and conservation of the greater one-horned rhinoceros*. Columbia University Press, New York. 316 p.
- Foose TJ, van Strein N, eds. 1997. *Asian rhinos: status survey and conservation action plan*. IUCN/SSC Asian Rhino Specialist Group. IUCN, Gland, Switzerland.
- Franklin IA. 1980. Evolutionary change in small populations. In: Soule ME, Wilcox BA, eds. *Conservation biology: an evolutionary perspective*. Sianauer Associates, Sunderland, Massachusetts, USA. p. 135–149.
- Laurie WA. 1978. The ecology and behaviour of the greater one-horned rhinoceros. PhD thesis, University of Cambridge. 450 p.
- Martin EB. 1983. *Rhino exploitation: the trade in rhino products in India, Indonesia, Malaysia, Burma, Japan and South Korea*. WWF, Hong Kong. 122 p.
- Rookmaaker K. 1999. The rhinos of Kotdwara. *Hornbill* July–September, no. 9.
- Sale JB, Singh S. 1987. Reintroduction of the greater Indian rhinoceros into Dudhwa National Park. *Oryx* 21(2):81–84.
- Schenkel R, Schenkel L. 1979. General report and synopsis. SSC Asian Rhino Specialist Group. Special Meeting, Bangkok, 13–16 August 1979. IUCN, Gland, Switzerland, Unpublished.
- Singh S, Rao K. 1984. *India's rhino re-introduction programme*. Department of Environment, Government of India, 76 p.