

Status Paper of Parsa Wildlife Reserve

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Abstract

Parsa Wildlife Reserve, located in the central Terai, was gazetted in 1984 as an extension of the Royal Chitwan National Park to provide additional coverage of the pristine habitat for the increasing population of wild animals in the National Park. Since the reserve is primarily located in the Bhabhar region south of the Churia hills, the area is covered with dense forest and has hardly any natural grassland. However, a small patch of grassland has been created by clearing the eucalyptus trees planted as a part of a research project before the reserve was declared. There is a plan to create more grassland by clearing another eucalyptus patch and by relocating existing settlements inside the reserve. The newly-created grassland has provided additional grazing land for wild animals and thatch grass for the local people. The same is expected from the area where grasslands will be created in the future. This change is intended to help in the conservation of biodiversity within the reserve.

Introduction

Established in 1984, and lying within 27° 15' - 27° 33' N and 84° 41' - 84° 58' E, Parsa Wildlife Reserve (PWR) protects 499 sq.km of habitat within Nepal's Terai, Inner Terai, and Churia hills. The elevation ranges from 150 masl to 800 masl (Chaudhary *et al.* 1995). The PWR extends from the Royal Chitwan National Park (RCNP) in the west to the Hetauda-Birgunj highway in the east; The northern and southern boundaries are demarcated by the Rapti River and main Churia ridge, and a 36 km long forest road, respectively. The park hosts an incredible amount of biodiversity

A proposed buffer zone for the reserve encompasses 369 sq.km in 19 village development committee areas (VDCs) in three districts, Bara, Parsa, and Makwanpur. Four small villages are located inside the reserve—two on the southern side of the Churia hills (Rambouri and Bhata with about 55 ha of agricultural land) and two in the inner Terai along the Rapti River (Ramouli and Pratappur with about 150 ha).

The total number of households in the buffer zone area is estimated to be about 10,500 with a population of 84,000 (unpublished data). The majority of the indigenous people are Tharu, Dhangar, Yadav, or muslims, with minorities of Mushar, Hazra, and Malaha. There are also a number of *pahadia*, people who migrated from the hills after the eradication of malaria in the 1950s.

The uniqueness of PWR lies in its distinction as being set aside exclusively for the wild Asian elephant (*Elephas maximus*). Approximately 35 individuals of this endangered species are found here, along with many other endangered mammals including the royal bengal tiger (*Panthera tigris*), striped hyaena (*Hyaena hyaena*), four-horned antelope (*Tetracerus quadricornis*), and,

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occasionally, the one-horned rhinoceros (*Rhinoceros unicornis*)—which crosses the boundary from RCNP to the reserve.

Altogether 33 species of mammals and 31 species of butterflies (Budha *et al.* 1998) have been recorded in PWR. The endangered giant hornbill (*Buceros bicornis*) is one of an estimated 300 species of birds in the reserve. There are also many reptiles such as krait (*Bungarus caeruleus*), banded krait (*B. fasciatus*), common cobra (*Naja naja*), king cobra (*Ophiophagus hannah*), and the endangered Asian rock python (*Python molurus*) and golden monitor lizard (*Varanus bengalensis*).

A total of 333 recorded plant species (327 of them angiosperms) has been recorded. The vegetation is broadly categorised into six forest types: mixed deciduous hardwood, sal, sal-pine, pine, acacia, and mixed deciduous riverine forest (Chaudhary *et al.* 1995). Sal (*Shorea robusta*) and its associated species are predominant covering about 90% of the reserve area. There are no natural grassland habitats.

PWR's ecological goals are the provision of additional habitat for offspring of the RCNP, securing the wild elephant habitat, and protecting the unique Churia range. These goals are encompassed by PWR's overall objective to enhance the conservation of the natural ecosystem in a sustainable way.

Grasslands: Status and Significance

The reserve has no naturally occurring grassland. However, in 1996 3.45 ha of shrubs, bushes, and eucalyptus trees were cleared to create grassland. These trees were planted under a research project (no longer in operation) several years before the area was declared a wildlife reserve. This new grassland lies just west of the headquarters in Adhavar and north of the reserve's southern boundary. The aim was to provide wildlife with a suitable grazing habitat. The main components of the grassland are kush (*Vetiveria zizanioides*) and siroo (*Imperata cylindrica*). Some of these grasses grow up to five metres high during the monsoon.

A nearby observation tower overlooks the grassland and thus enables easier viewing of wildlife. Throughout the year, herds of spotted deer (*Axis axis*), hog deer (*Axis porcinus*), and gaur (*Bos gaurus*) can be observed in this new grassland. Bird species are attracted too: so far nearly 80 species have been observed in and around the grassland. Commonly-sighted birds include red jungle fowl (*Gallus gallus*), spotted dove (*Streptopelia chinensis*), chestnut-headed bee-eaters (*Merops leschenaulti*), owls, pheasants, and warblers.

Grassland Management Activities

Since the conversion of the forest patch into grassland in 1996, controlled burning has been done once a year to help prevent invasion by trees. Similarly, villagers from outside the park are allowed to cut the grasses once a year in winter for their own use, thereby benefiting the local community.

Research Activities

Research has been done in PWR and its surrounding villages, on the biodiversity and cultural diversity (Chaudhary *et al.* 1995; Budha *et al.* 1998),

the status of gaur (*Bos gaurus*), and the status and behavior of chital (*Axis axis*). Although these research activities were not directly related to the grasslands, their results will help in monitoring the impact of the created and to be created grasslands on the status of biodiversity in general, and of wild animals in particular. In addition, the reserve authorities carry out regular monitoring of the movement of wild animals around the newly-created grasslands.

Management Issues

The reserve faces a variety of future challenges. Under the proposed management strategy framework and the grassland conversions, the four settlements Rambouri, Bhata, Ramouli, and Pratapur would be relocated. This will need the cooperation and commitment of several stakeholders including local people, politicians, and government authorities.

Research Gaps/Needs

No detailed systematic research has yet been done on the change in plant species composition in the created grasslands. Such research is needed so that interventions can be made at an appropriate time for better habitat management. Similarly, research needs to be done on the biomass production and carrying capacity of such grasslands so that the population of wild animals can be maintained at the optimum level.

Baseline data on the species composition in and around the fields of settlements should be gathered. Once the area has been evacuated, regular monitoring of the successional changes should be done.

The impact of grass harvesting by local people on the newly-created grasslands should be monitored carefully so that harvesting can be done at the optimum level.

Management Recommendations

As a result of the observations of the benefits accruing from PWR's newly-created grasslands, another grassland conversion is proposed that would expand the created habitat. This conversion would take place directly north and adjacent to the first grassland and would replace a four hectare plot of exotic eucalyptus trees. The rationale behind this recommendation is that the eucalyptus trees do not belong to the natural vegetation inside the reserve. The trees draw away an incredible amount of the precious water needed for the native species, thus eradication of the trees is important for the quality of PWR as a representative of the indigenous vegetation of Nepal.

Similarly, the extension of the grassland area would increase the amount of grazing land available for wildlife, and this should reduce the frequency of wildlife crop-raiding outside the reserve. Subsequently, predators will be drawn to the grasslands for their survival. Common leopards (*Panthera pardus*) have recently been sighted around the newly-created grassland. This would help to maintain the natural food chain in the area.

In the future, the village areas of Rambouri/Bhata and Ramouli/Pratapur could also become grasslands. The reserve considers these villages to be problems as

a result of their impact on the ecosystem from over-grazing by livestock and the collection of firewood and fodder. Relocation of these settlements is proposed under a management strategy framework, with conversion of the land into grasslands. Rambouri/Bhata would provide about 55 ha, and Ramouli/Pratappur about 150 ha of grassland area. The near proximity of water at both of these sites is also advantageous as it would allow the new grasslands to flourish.

A further plan proposed in the management strategy is to extend the reserve's eastern boundary up to the Pashaha River in Bara District. This would provide extended habitat and protection for wild animals, especially for elephants. Elephants and other wildlife are known to cross the Hetauda-Birgunj highway, overstepping the reserve's current eastern boundary. This extension would include an important wetland, Halkhoria Daha, in the PWR thus providing more protected water sources in an area where surface water is scarce throughout most of the year.

Although detailed systematic research still has to be done, the proposed management activities are intended to help accomplish the following objectives.

- To provide additional habitat for wildlife in the form of grazing land
- To remove the exotic eucalyptus trees so that only native flora are represented
- To reduce the conflict between people and wild animals that graze on crops
- To curb the problems of over-grazing by livestock and of firewood and fodder collection within the reserve
- To benefit people by making more grass available for cutting for local use, thereby helping to foster a positive relationship between people and the reserve.
- To promote tourism by making viewing of wildlife easier

Conclusion

The Parsa Wildlife Reserve's converted grassland has attracted several species of wildlife and helped provide thatch grass to the local community. Other sites, including an adjacent plot of eucalyptus trees and four settlements inside the reserve, have been designated for possible future conversion to grasslands. Although some problems like over-grazing by livestock and collection of firewood and fodder from the reserve would be reduced as a result of the planned conversion, the issue of the relocation of the village settlements is a major problem that still needs to be addressed.

The creation of new grasslands would provide grazing land for the wild animals within the reserve and thus help minimise park-people conflicts. The proposed buffer zone, and the participation of local people in its management, will help both the sustainable management of the ecosystems and their biodiversity, and the development of the surrounding communities.

References

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