

MANAGEMENT OF JALDAPARA WILDLIFE SANCTUARY, WEST BENGAL, INDIA

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Introduction

Jaldapara Wildlife Sanctuary is located in the foothills of the eastern Himalayas in the Jalpaiguri district of West Bengal. It was declared a game sanctuary in 1941, comprising an area of 99.5 km². Two subsequent extensions in 1976 and 1990 increased the area of the sanctuary to the present 216.5 km², covering 12 forest blocks and 46 compartments. The sanctuary has 32 revenue villages scattered all along the boundaries and a human population of 90,000.

The sanctuary serves as a gene pool reserve for the great Indian one-horned rhinoceros outside Assam and Nepal. It is home to 33 species of mammals, 230 species of birds, 16 species of reptiles, 8 species of turtles, and 30 species of fish. Eleven vertebrate species belonging to Schedule 1 of the Wild Life (Protection), Act, 1972 (updated to 1991) are considered to be endangered, including: rhinoceros, tiger, gaur, elephant, sloth bear, leopard, hog badger, hispid hare, Bengal florican, python, and pangolin, among others. About 70,000 cattle are present in the sanctuary. Jaldapara is also rich in floral diversity and contains 585 species of flowering plants belonging to 429 genera (111 families).

Jaldapara has tremendous tourism potential and every year 12-15,000 visitors visit the sanctuary, through which the local people receive both direct and indirect benefits.

The major habitat types of the sanctuary are: a) dry mixed type, b) wet mixed type, c) mixed sal, d) grasslands, e) grasslands with khair-sissoo succession, f) grasslands with simul-siris succession, g) bamboo brakes, i) plantations, and j) sandy river beds and cane brakes in the existing swamps.

The grasslands of this area are in the early stage of natural succession and tend to be replaced by forest which is the climax succession. As a result, a voracious invasion of tree species on the grassland is occurring by species such as *Dalbergia sissoo*, *Bombax ceiba*, *Acacia catechu*, *Albizia procera*, *Lagerstromia parviflora*, *Dillenia pentagyna*, etc. The grasslands in the flood plain area are naturally maintained by the river course. The Torsa river changed its course in 1968 from west to east, and most of the area of its earlier course is grassland. However, trees are emerging and covering the grassland and some areas have already been covered.

The villagers mostly belong to scheduled castes and tribes. They are poor, illiterate, agriculturally backward, and mostly dependent on the forest for grazing of livestock, collection of fuelwood, small timber, fodder and thatch grasses, *Bombax* floss, and other non-wood forest products, which puts tremendous pressure on the sanctuary. Moreover, there are nine teagardens situated around the periphery of the sanctuary and their labourers are also dependent on the sanctuary's natural resources to fulfil their needs.

The endangered Toto tribe, with a total population of 1,000, resides in Totopara in the northern part of the sanctuary near Titi block. Their customs and culture have great anthropological value.

Problems in the Sanctuary

1. **Poaching of rhinos:** The rhinos in Jaldapara Sanctuary are susceptible to poaching. Records of rhino poaching in the sanctuary were inadequately maintained prior to 1968. A total of 34 rhinos were poached between 1968 and

1973. No rhino poaching was reported between 1973 to 1977. In 1978, one animal was killed, but none during 1979. From 1980-1985, 11 rhinos were poached, but there were no reports of poaching between 1986 and 1990. Poaching incidences have decreased and three animals were taken between 1991 and 1993, one in each year. Since then, no reports of poaching have been received.

Rhinos are killed for their horns. Some people in southeast Asian countries believe that the horn has aphrodisiac properties, although scientific studies have shown that it is composed of fibres which possess no such medicinal properties. The clandestine market price of rhino horn is US\$40,000 per kg.

2. Degradation of habitat:

- i. *Illicit felling of timber and collection of fuelwood and non-wood forest products:* Illicit felling of timber is quite a serious problem in the sanctuary and should be viewed with as much seriousness as poaching because this practice affects the wild animals through destruction of habitat. Similarly, the large scale collection of fuelwood and non-wood forest products is also degrading the habitat.
- ii. *Grazing by livestock of fringe villages:* Thirty-two fringe villages and 4 forest villages in Jaldapara Sanctuary contain about 70,000 head of livestock which depend on the sanctuary for grazing. In addition, the livestock of the nearby tea gardens also graze in the sanctuary. It has been calculated that approximately 10,652 cattle graze in the sanctuary area daily.
- iii. *Weeds and climber infestation:* The weeds *Lantana* spp., *Leea* spp., *Clerodendron* spp., *Cassia* spp., *Eupatorium* spp., fern and the climber *Mikania* are altering the wildlife habitat extensively.

- iv. *Advancement of woodland in grassland:* The sanctuary area situated in the flood plain area of the Torsa river contains unique savannah grasslands, but now the riverine succession of tree species such as *Dalbergia sissoo*, *Acacia catechu*, *Bombax ceiba*, *Albizia* sp., etc., are gradually invading the grassland and changing their status to woodland.
 - v. *Fires:* The incidence of man-made wild ground fire in grasslands areas is common, but not to a great extent. Such uncontrolled fire has a deleterious effect on vegetation and wildlife.
 - vi. *Past forestry practices:* Although not favoured by wild animals, several hectares of teak (*Tectona grandis*) plantations were raised in Titi, Bania and Mendabari blocks for economic gain.
 - vii. *Inadequate soil moisture, regime:* Grassland of older channels of the Torsa river have been suffering due to insufficient flooding and, due to a change in the course of the Torsa river in 1968, the flood vegetation pattern of Jaldapara and Torsa block is gradually changing.
3. **Diseases among wildlife:** Diseases like anthrax, foot-and-mouth disease, rinderpest, etc. among wild animals are not uncommon. During 1994, three wild tusker elephants died from anthrax and in 1968, 31 gaur died in an outbreak of rinderpest
 4. **Transboundary problem in the northern part of the sanctuary (Titi block):** Poachers easily cross the international boundary which makes them immune to local laws and prevents the detection of offenses.
 5. **Inadequately trained staff:** Staff at the lower levels are not trained in modern protected area management, use of firearms, captive elephant management, etc.

6. **Growth of population and inadequate conservation awareness:** The fringe villages and forest villages in the sanctuary have a total human population of 88,193, most of whom are poor and uneducated. Many depend on the sanctuary for their livelihood, including labourers in the tea gardens. The population is largely unaware about the need for conservation.
7. **Sawmills, veneer mills and furniture shops in fringe areas:** There are 6 licensed saw mills and veneer mills, plus many unauthorized ones. These, plus the 34 furniture shops situated in the Madarihat and Falakata areas, are a constant threat to the sanctuary due to illicit felling.
8. **Man-animal conflicts include:**
 - i. Straying of wild animals such as elephant, gaur, leopard, rhino, deer, and other wild animals into the fringe villages.
 - ii. Crop raiding by wild animals
 - iii. Insufficient and delayed payment of compensation for damages.
9. **Insufficient infrastructure which needs:**
 - i. Proper training and availability of modern firearms.
 - ii. Establishment of wireless networks in the extended sanctuary area.
 - iii. Provision of adequate number of patrolling elephants and vehicles.
 - iv. Training and provision for modern fire fighting tools.
 - v. Erection of more multistrand energized fencing around the problematic areas.
10. **Existence of enclave, revenue, and forest villages within the notified sanctuary area.**
11. **Multiple administrative and police jurisdictions.**

Recommendations

The following strategies are proposed to solve the management problems:

1. **Control of poaching:** To control poaching, the following measures are proposed:
 - i. Provision of sufficient trained patrol staff to combat poachers and organized smugglers.
 - ii. Reorganization of existing ranges, beats and camps, and establishment of an additional two ranges, one beat, and two camps in vulnerable areas to prevent entry of poachers, smugglers and illicit loggers.
 - iii. Strengthening of communication works by purchasing new vehicles (e.g., cars, motorcycles, boats, etc.) and repair and maintenance of existing roads, tracks and firelines, bridges and culverts.
 - iv. Provision of sufficient number of modern firearms and ammunition.
 - v. Strengthening R.T. networking by installing high frequency wireless in fixed or mobile sets and walkie-talkies.
 - vi. Establishment of legal cell.
 - vii. Interagency coordination with general administration and para-military forces when needed.
 - viii. Provision of secret fund.
 - ix. Establishment of good intelligence network for collection of information on attempts to catch poachers and smugglers.
 - x. Interstate and international coordination to enforce national and international laws.
 - xi. Incentive and rewards to staff and informants to boost their morale.
 - xii. Increase conservation awareness among the local people.
2. **Habitat improvement works to provide food for wild animals:**
 - i. Over wood removal in areas colonized by khair-sissoo (*Dalbergia sissoo*),

- malata (*Macaranga denticulata*), tantari (*Dillenia pentagyna*), and Sidha (*Lagerstromia parviflora*), followed by weed elimination and enrichment planting with indigenous fodder grasses. No large gap should be created and plants above 90 cm dbh should be retained in a ratio of 100 trees per ha.
- ii. Plantation (on an experimental basis) of indigenous tall and short fodder grasses and fruit species in degraded areas (including over wood removal areas) as food for wild animals, and subsequent maintenance operations (e.g., weeding, cleaning, etc.). Fodder species to include different species of *Saccharum*, nal (*Arundo donax*), khagra (*Phragmites karka*), bhutta grass (*Coix lachrymajobi*), banspati (*Setaria* spp.), bamboo and *Alpinia* spp., etc. Fruit species will be jackfruit, haritaki (*Terminalia chebula*), bahera (*T. belerica*), amla (*Emblica officinalis*), lator (*Artocarpus chaplasi*), and short grasses like *Cynodon dactylon*, *Panicum* sp., *Paspalum* sp., *Vetiveria* sp., *Chrysopogon* sp., etc. in between tall grasses.
 - iii. Eradication of weeds such as *Eupatorium* spp., *Leea* spp., *Cassia tora*, and climbers (*Mikania* spp.). *Cymbopogon* species also to be eradicated and enrichment plantation of indigenous fodder grasses should be raised on an experimental basis to provide more food to wild herbivores. *Mikania* will be cut by October and *Leea* before September.
 - iv. Judicious use of fire for production of nutritive fodder in natural grassland as well as fodder plantation areas at 2-year intervals for dry grassland and 3-year intervals for moist grasslands.
 - v. Selective removal of tree species in natural grassland for better growth of grasses.
 - vi. Maintenance of special habitat like dead standing trees (snag), den trees, tall trees, caves, and areas containing endangered plant species.
 - vii. Control of fire.
3. **Grazing:** To control grazing, the following strategies are proposed:
 - i. Intensive patrolling all around the sanctuary.
 - ii. Raising fodder plantations on community lands, private lands, vested lands, or panchayat lands for stall feeding of fringe cattle.
 - iii. Reduction in number of low-yielding milch cattle through castration of useless bulls and artificial insemination of cows.
 - iv. Keeping good health and disease-free condition of village cattle through organization of veterinary camps with help of Animal Husbandry department.
 - v. More cattle pawns be developed in strategic locations.
 4. **Reforestation of degraded areas** along the periphery and near fringe villages within the sanctuary, maintenance and thinning of older plantations for local consumption.
 5. **Conservation of soil and water:**
 - i. Embankment protection works to be undertaken on the banks of Hollong, Bhaluka, Buritorsa, Kalijhora, Sissamara and Malangijhora at vulnerable areas.
 - ii. Construction of water harvesting structures on streams to increase soil moisture during dry periods and to suppress the invasion of weeds like lemon grasses and encourage growth of fodder grasses like *Arundo donax*, *Typha*, *Saccharum* spp., by collecting baseline data and year-wise photographs to monitor any changes taking place and to give timely management inputs.
 6. To combat the illicit running of sawmills, veneer mills and furniture shops, the following are proposed:

- i. During issuing of new licenses, adequate precautions should be taken.
- ii. Regular checking of wood-based industries should be carried out.
- iii. Interdepartmental cooperation to be developed to monitor the movement of forest-based produce.
- iv. Development of intelligence networks to gather information on illicit felling of timber and for taking preventative measures.

7. Illicit removal of timber, fuelwood and non-wood forest products:

- i. Intensive vigilance and enforcement of laws.
- ii. Formation of Eco-development Committee (E.D.C.) through government resolutions and site specific ecodevelopment works to reduce dependency on forest for fuel wood and fodder.
- iii. Promoting nature awareness among villagers through conservation education.
- iv. Proper coordination with panchayats.
- v. Plantation of timber and fuelwood species available to panchayats, vested, private and community lands of E.D.C. villages to meet their demand for fuelwood and timber.
- vi. Use of nonconventional energy sources like biogas, solar cookers, etc.
- vii. Collection of non-wood forest products

will be allowed as per draft E.D.C. guidelines.

8. **Titi, Jaigaon, Hasimara, Jaldapara (1,2), Bania, and Mendabari block will be managed as elephant habitat** and in open areas small patches of fodder plantations will be raised. In Bania and Mendabari block, to encourage growth of fodder grasses, teak plantations will be thinned out in phases, retaining 150-175 trees per hectare.

9. **Man-animal conflicts:** To reduce man-animal conflicts, the following strategies are proposed:

- i. Erection of multi-strand energized fencing in some strategic points.
- ii. Formation of voluntary E.D.C. village level antidepredation squads.
- iii. Changing of crop pattern.
- iv. Raising fodder plantations in blank patches of forest.
- v. Conservation awareness generation programmes.

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