

An overview of Elephant Breeding Center at Royal Chitwan National Park, Nepal

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Elephant Breeding Center (EBC) was established in 1985 at Royal Chitwan National Park (RCNP). This is the only EBC in Nepal. Twenty elephants have been placed at EBC for breeding purposes. Nineteen calves have been reproduced at EBC and survival rate was found to be 59.6 percent. Fodder for elephants at EBC has become scarce due to handing over of forest to community forest. Funds should be allocated for short-term, mid-term and long-term management plans of EBC. An elephant breeding forest should be established to fulfill the emergency demand of grass and fodder. A breeding compartment should be developed for mating with wild bull. Well trained and appropriate number of staff should be provided and an "Elephant Camps Service" should be created separately for promoting them. Budget for calf training and pregnant elephants should be allocated separately.

Key words: Captive elephant, Breeding Centre, Royal Chitwan National Park, Survival, Wild bull, Calves

Captive Asian elephants are listed in CITES Appendix II. The Nepal's National Parks and Wildlife Conservation Act 1973 also enlisted them as protected species. established in 1985 Elephant Breeding Center (EBC) is the only center for *ex-situ* conservation in Nepal. In addition to this other five elephant' camps have been established in the protected areas of the Terai.

Twenty elephants have been placed at Khorshor for *ex-situ* conservation. Some breeding cow elephants were placed at the EBC from different elephant camps of the country. Four bulls and 12 cow elephants were exchanged with 4 Rhinos from India. Two bulls and two cow elephants were also brought from Thailand to EBC. This center helps in scientific research and gene pool conservation of Asian elephants through captive breeding program. It also fulfills the requirement of elephants for other activities such as tourism and park patrolling.

The paper presents an overview of Elephant Breeding Center along with the management plan for better functioning of EBC at RCNP.

Method

The study was carried out at Khorshor, 5 km west from Sauraha from 20 October 2002 through 1st December 2002. Focus group interview and

semi-structure interviews were carried out to collect data.

A field survey was carried out to find out the existing boundary and new extension areas by GPS and Silva compass. Direct observation and measurement of existing infrastructures and new extension forest areas were carried out. Formal and informal interviews were carried out among elephant's Mahauts park staff (n=30), member of hotel association, KMTNC, Hoteliers, and local people (n =35). Secondary data were collected from Department of National Parks and Wildlife Conservation (DNPWC), EBC and Royal Chitwan National Park.

Result and discussion

Status of domestic elephants in Nepal

Out of 184 domestic elephants in Nepal, those owned by His Majesty Government of Nepal are 81. These elephants are used for tourism, patrolling and research work in different protected areas of the country. Hotel concessionaires are using 74 domestic elephants (Appendix 2) for tourism inside the protected areas of the country. Hotel and Lodge owner have been using 21 domestic elephants (Appendix 2) for tourism outside the protected areas at Sauraha Chitwan. Nine elephants are owned by KMTNC for tourism and research purposes at Chitwan and Bardiya National Park and central zoo Kathmandu.

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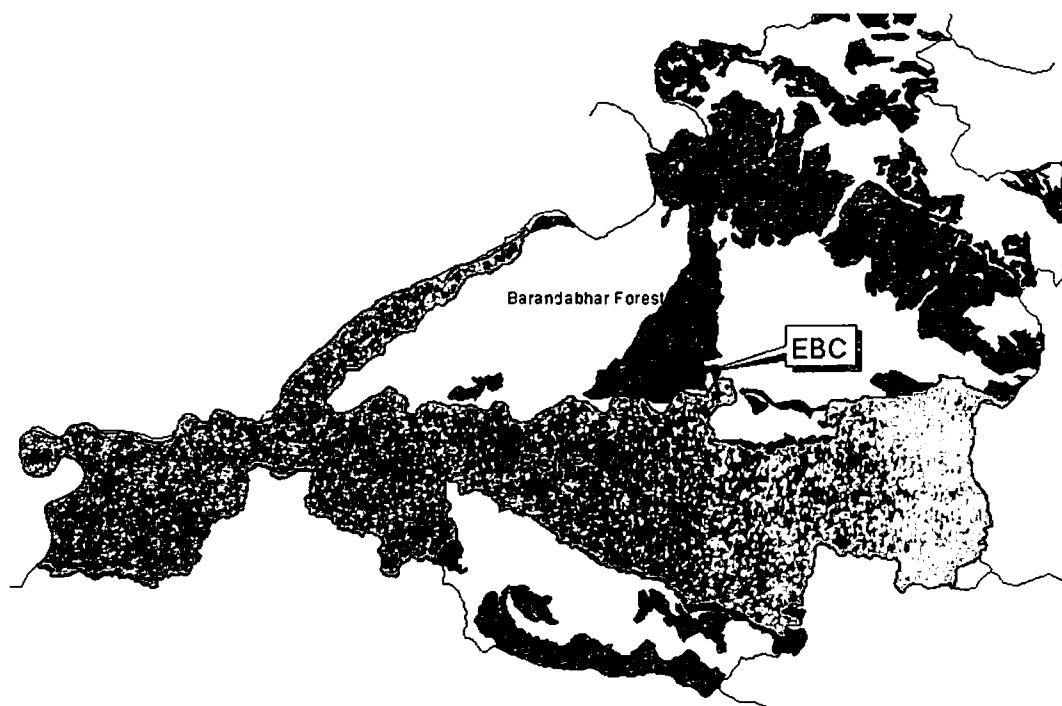


Figure 1: Map indicates the location of existing Elephant Breeding Center at Khorshor, RCNP.

Survival of elephant calves in Nepal

Domestic elephants have been giving birth of calves since 1979 through breeding. Both wild bulls and domestic bulls mate domestic cow elephants. Thirty

two calves have been born since 1979 to 2002 in all Terai elephants camps (Office Records of RCNP 2002). Twenty calves (62.5 percent) have been born through wild bulls mating, whereas 12 calves (37.5 percent) have been born from domestic bulls namely

Table 1 : Birth of calves at EBC through different parents

SN	Name of calf	Name of mother	Name of Sire	Date of birth (V.S.)	Remarks
1		Menakali	Birendra	2047/07/15	Dead
2		Komal kali	Birendra	2047/05/10	Dead
3		do	Wild	2058/02/32	Dead
4		Rampyari	Birendra	2053/09/12	Dead
5		do	do	2055/08/06	Dead
6		Devikali	Wild	2058/05/15	Dead
7		Laxmikali	Birendra	2057/02/10	Dead
8		Umakali	Wild	2057/11/12	Dead
9	Bahadurgaj	Rampyari	Birendra Prasad	2049/12/22	
10	Chitwankali	do	Ganeshgaj	2046/08/03	
11	Gandakaikali	Prernakalii	Birendra Prasad	2054/05/30	
12	Parash gaj	do	Wild	2058/03/02	
13	Raptikali	Shashikalii	Birendra Prasad	2054/09/28	
14	Narayanikali	do	wild	2057/01/07	
15	Karnalikali	Sistasmakalii	Birendra Prasad	2055/04/02	
16	Unnamed (M)	do		2059/01/25	
17	Unnamked	Shamsherkali	wild	2058/12/25	
18	Ramgaj	Bhirkutikali	Ganeshgaj	2046/08/06	
19	Chitwan Himanikali	Pujakali	Birendra Prasad	2058/03/04	

Sources: Office records, RCNP

Birendra Prasad, Dharendra Prasad and Ganesh Gaj. Thirteen calves have died since 1979 to 2002 either through abortion or after birth with 40.4 percent mortality.

Eight calves were born dead and one died after birth (Table 1). The pregnant elephants put at the stall-feeding without work is the main cause of abortion. Non-working pregnant elephants aborted their calves many times (per comm., elephant's staff, Bhagu Tharu Gazette Subba). The pregnant elephants should work for easy birth of their calves.

Existing infrastructure at EBC

Elephant's shade, staff quarters, and storehouses for ration have been built, but are in adequate for both the staff and elephants. Staff quarters are not suitable for residence. Entire barbed wire fencing of the EBC has been destroyed by flood. Cattle grazing and stealing of elephant's tails hairs are uncontrolled due to open access at EBC.

Ration management for elephants

Existing ration do not give required energy to the elephants. The proposed scale has been recommended from the departmental team (Table 2).

Table 2: The daily existing and proposed ration for elephants

SN	Items	Existing Quantity (kg)	Proposed Quantity (kg)
1	Paddy	15.0	10
2	Moll sage	1.5	1
3	Salt	0.025	.025
4	Wheat	5.0	5
5	Aalugazar		2
6	Pumkin		2
7	Gram		2
8	Straw	5.0	10

Source: Reported by S. Bajimaya, K.P. Gahire and S.M. Shrestha 2057

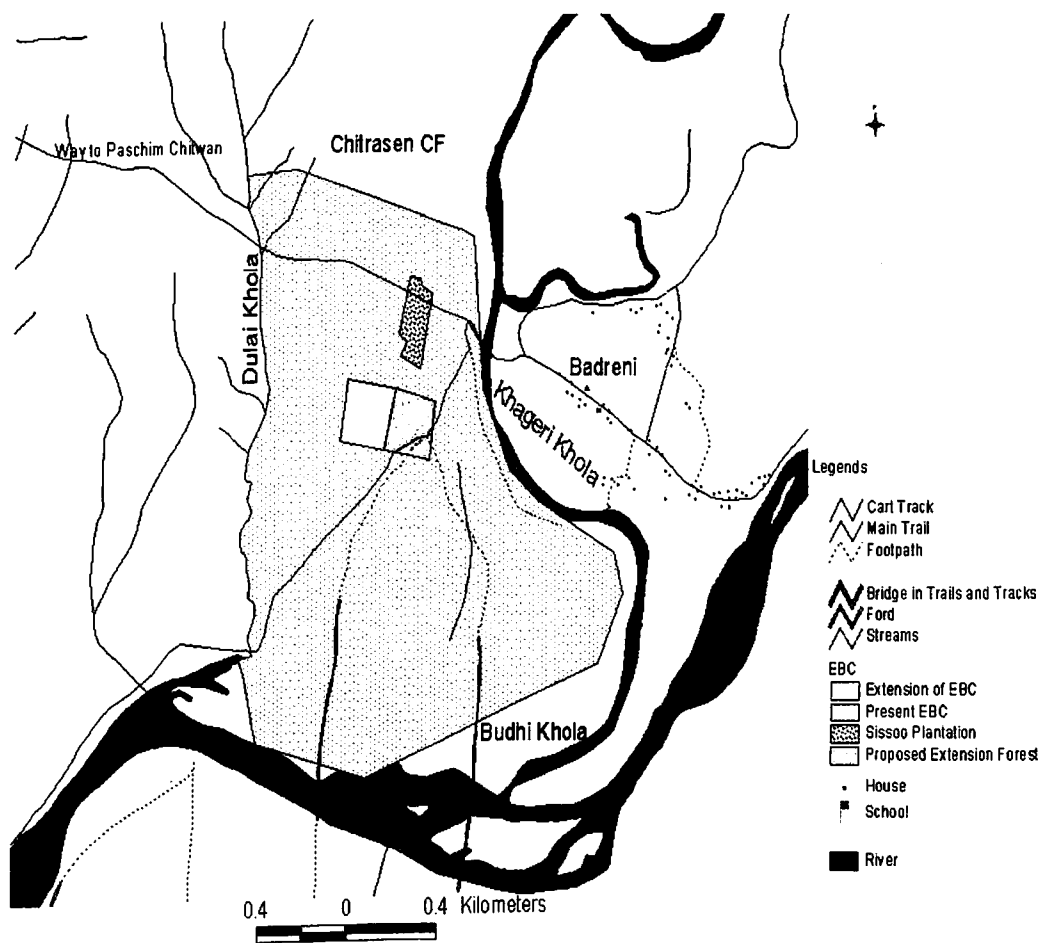


Figure 2: Map indicates the existing and proposed extension areas of EBC,

Proposed elephants breeding forest at EBC

The elephants at the EBC have been facing the shortage of grasses and fodders. Most of the surroundings forest areas have been handed over to the local community as a community forest, which do not allow collecting fodder. Existing areas of EBC is only for stall-feeding and residence. A new forest extension area was surveyed and included into EBC for the future emergency needs of fodder and grass for elephants.

East side of this forest has been degraded due to over grazing and fodder and firewood collection. Sal forest (west) and riverine forest (east) is the main vegetative cover inside the forest. Some of the areas of this forest are open grassland and naked land (south) (See figure 2).

Tourism management

Most of the hotels and lodges organise visit program to EBC for their guest. EBC is fascinating place for a foreign tourist especially for Europeans, Australians and Americans. The facilities for tourist have not been developed so far at this center. The entry fee is NRs 15 per person is only for foreign tourist. The number of tourists from 1997/, 98 –2001/, and 2002 are given in Figure 3.

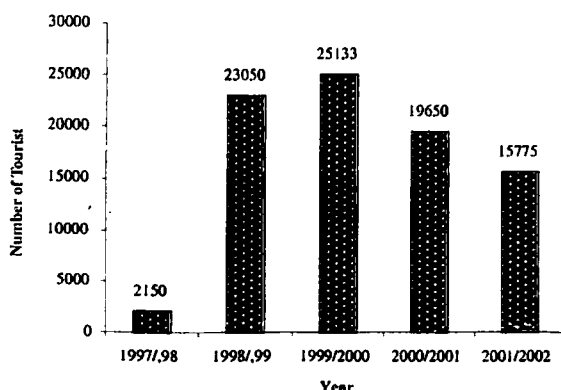


Figure 3: Annual number of tourists at the Elephant Breeding Center

Lack of water supply scheme

Elephants need much water compared to other large animals. One elephant needs 150-200 liters a day and it is very difficult task for an elephant's drivers to supply water to the elephants crying in bucket. Lack of adequate water supply for elephants and staff is a serious problem. Water supply scheme has not been developed for the elephants at the center. One hand pump has been established which cannot meet supply the water require for all elephants.

Non-working and non-mating bulls

The feeding time of bulls is not regular due to their aggressive nature, which enhance in starvation of bull elephants. Non-working bulls became *musth* every year and in this circumstance the elephants became aggressive. Aggressive bulls do not obey their Mahuts. They are put at stall-feeding making them more aggressive. Sometimes some bulls are tranquilized by sedative to control. In this aggressive stage bull kill their drivers. Sometimes they do not get sufficient feeding and sufficient drinking water.

Staff casualties and injury at EBC

Domestic elephants killed Ram Prasad Chaudhry, Guni Lal Chaudhary, Dhan B. Tamang and Amrit Kurmi so far. These staff were killed by domestic elephants during their duty, but the government do not have special provision for compensation. The staff sometimes get injured by their elephants, and sometimes fall down from trees during fodder collection. Some have even become disable. There is no life insurance for the elephant staff.

Medical treatment to elephant and staff

The number of elephants has been increasing every year. HMG has allocated NRs.75, 000.00 (office records) for 20 elephants deworming only. Elephants mostly eat soils with paddy, which enhance the worms in their intestine. Only one Vet. Officer is available for all elephant's camp. One doctor cannot manage all the elephants in time and thus this is a serious problem for proper medical treatments of elephants at EBC. First aid is not available for injured staff at the center.

Comparison of working hours of Elephant's Mahauts and civil servant.

The elephant staff (Mahaut, Pachhuwa and Phanit) work average 5,353 hours annually and the civilian staff outside the PAs works 2,065 hours annually. The Mahouts work 2.51 times to 2.83 times more than civil servant. (See Table 3).

Mahauts work 15-17 hours, Pachhuwa works 14-16 hours and Phanit 12-14 hours per day. *Subba, Kharidar, Daroga*, and Raut take care general administration and ration management of elephant's camp. Mahouts are paid of NRs. 5.80 per hour whereas peons of other civil servant is paid NRs. 17.43 per hours. The Mahouts, Pachhuwa and Phanit should be paid NRs.

Table 3: Salary and working hours of HMG/N civil servant outside and elephant camp staff at EBC

Designation	Total salary per year	Working hours/year	Salary/hour (NRs.)	Vacation, Dasian, Tihar and public holiday (days)
HMG/N Staff				
Peon	36000.00	2065	17.43	70
Bahidar	39,600.00	2065	19.17	70
Mukhiya	43,200.00	2065	20.92	70
Elephant Camp Staff				
Mahaut	36,000.00	5840	6.16	0
Pachhuwa	39,600.00	5475	7.23	0
Phanit	39,600.00	4745	8.34	0

278.88, NRs. 287.55 and NRs. 292.88 respectively based on their working hours.

Mahauts do not get any vacation on Saturday, public holidays, Dasain, Tihar, Chhatha Puja as other civil staff do. Mahouts' work 2.83 times than a peon, and his salary should be NRs. 8490.00; Pachhuwa salary should be 2.65 times higher than a Bahidar, and the salary of Phanit should be 2.51 times than a Mukhiya. Hard work and lack of physical facilities, threat of an aggressive bull discourage Mahouts to continue the job. Thus most of the Mahouts are willing to resign due to harassment.

Expenditure and income of EBC

Additional funds for training and ration to newborn calves and mother

Training to the calves starts at the age of 3 years. There is no provision of extra ration to mother and calf and extra funds for training to newborn calf. Currently this expenditure has been maintained by KMTNC from the entry fees of EBC. Calf starts to feed after 5 months other than mothers milk. Fund is needed to buy banana and rice pooding to the newborn calves. About Rs. 10,000.00 to 15,000.00 for 3-5 moths (per comm. Gazetted Subbs Ram Ishawar Chaudhary, Bhagu Tharu and S.M.Shrestha) is needed. (Table 4).

Asare Puja and Dashain Puja

It is a traditional belief that puja is very important for the elephant. It avoids accidents of Mahouts during the jungle work. It is celebrated on Dashain and in Ashad, and called Dashain puja and Asari Puja respectively. The budget allocated in 1989 (2046/10/08) from Ministry of Finance, is inappropriate. Budget sanctioned by DNPWC is only NRS. 15000.00 for two elephants camps Sauraha Hathisar and EBC whereas NRs. 15000.00 has been allocated to each PAs. RCNP has divided 15 thousands for two camps. No amendment has been made in the budget for the last 13 years. The present estimated budget for Ashare and Dashain Puja is made on the basis of current market price. (See Table 5).

Expenditure

The budget for EBC have been invested on Salary, ration of elephants, extra food to the pregnant elephants, training to the calves, Ashari and Dashain puja, medicine to the elephants, purchasing and maintenance of equipments (Hauda, Gaddi, Petara, Ropes, Chains), electricity, telephone. The annual estimated ration of elephants and salary of staff is about NRs .7, 798,000.00 (U\$100,000.00) at EBC annually.

Table 4: Expenditure needed to elephant's calf training

S.N	Items	Quantity	Amount (NRs.)	Remarks
1	Thread Ropes	1 quintal	15,000.00	
2	Chains for calf	1 sets	3000.00	Chhanuwa, Dharna,
3	Exe for new calf	1	200.00	
4	Ankusha	1	150.00	
5	Puaja materials	L/s	5,000.00	Pegions, Goat, She goat, Cock
6	Trainers staff	1 month	5,000.00	
7	Others	L/s	2000.00	
	Total		30,350.00	

Sources: Fieldwork and Elephants staff, Ram Ishawar Chudhary, Bhagu Tharu, Suryaman Shrestha

Table 5: Estimated budget expenditure for Asare Puja and Dashain Puja

SN	Items	Quantity	Rate (NRs.)	Total Amount	Remarks
1	He-goats	7	1500.00	10,500.00	
2	She-goats	7	1000.00	7,000.00	
3	Cocks	4	400.00	2400.00	
4	Pegion	10	100.00	1000.00	
5	He-buffalo	1	3000.00	3000.00	
6	Pig	1	1500.00	1500.00	
7	Others	L/s	L/s	3000.00	Puja materials
	Total			28,400.00	

Source: ProComm, S.M. Sbrestha and Elephants Staffs

Tangible benefits

Eleven calves born at the center assets to NRs. 8,800,000.00 (US\$ 1,13,000.00) to 1,000,000.00 (US\$ 1,28,000.00). Income from entry fees from 1997/98 to 2001/02 is 1,286,375.00. (Table 6). Evaluating the total elephants at the center an asset equivalent to about NRs 20,000,000.00 (US\$ 256,000.00). In total EBC earned about NRs. 3,220,000.00 (US\$ 4,13,000.00) from new born calves and existing domestic elephants including entry fees from tourist at EBC.

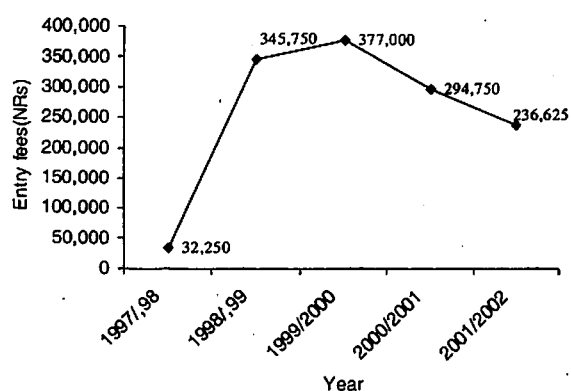
Table 6: Entry fees collected from tourists at EBC

S.N	Year	Number of tourist	Entry fees
1	1997/1998	2150	32,250.00
2	1998/1999	23050	345,750.00
3	1999/2000	25134	377,000.00
4	2000/2001	19650	294,750.00
5	2001/20 02	15775	236,625.00
Total		85759	1,286,375.00

Source: Records of RCNP and NCRTC, Sauraha

Figure 4 indicates that the entry fees earned by elephants is decreasing from 2000 to 2002. Initially it increasing well but, decreased later.

Figure 4: Entry fees earned from EBC



Intangible benefits

Park patrolling by elephants – one elephant is equivalent to 25-30 man-days (per comm. park staff and elephants staff) is one of the benefits. Local hotels and lodges are benefited from EBC because its visit is the part of their program. It also enhances the *ex-situ* conservation of Asian elephants in the captivity.

Recommendations

Short term

Staff quarter

Sixty-five staff is working at EBC, some 14 rooms and one hall is available for accommodations. Additional rooms should be built for staff. Existing staff quarter can be converted into visitor center at EBC.

Boundary wall of EBC

The fencing has been destroyed by flood in 2002. A perimeter of 800-meter permanent boundary cemented wall should be built around the EBC for proper protection.

Shades for elephants

A clan shade should be built for elephants to make it in chronological orders. Mother and calves should be put in same shade, which helps to get rid of depression between mother and calves.

Water supply scheme and sanitation

A water tank with capacity of 10,000 liters should be placed for water supply to elephants and staff at EBC. Staff and tourists are facing problems due to lack of toilets and bathrooms at the EBC. For good sanitation, toilet and bathroom should be built for tourist and staff at EBC.

Ration and uniform management of elephants and staff

Ration should be amended as suggested by S. Bajimaya, Dr. K.P. Gaire and S.M Shrestha (2057). Uniform should be provided to Mahauts similar to another park staff.

Funds for a pregnant elephants and calves training

Provision of training program of elephant's calves should be allocated. It is an expensive training so the budget should be allocated separately. Budget should be allocated for a pregnant and maternity elephants for 3-5 months.

Staff management

Eleven vacant staff of different posts (Mahaut, Pachhuwa and Phanit) should be fulfilled as soon as possible. In addition, four newly born calves needed 12 staf. New staff posts should be created.

Transfer of non-breeding elephants

Non-breeding cows and bull elephants should be transferred from EBC to *Chitwan Hathisar Sauraha* or use in patrolling, scientific research and tourism from the EBC. Domestic bull elephants should be transferred or shade should be built because wild bull injure them. Increasing number of elephants at EBC should be transferred to other protected areas.

Training to elephant's staff

Training on sanitation, conservation education, animal handling first aid about veterinary, National Park and Wildlife Conservation Act, CITES (Elephant) and Civil Servant Regulations should be given to elephants staff for about a work or so.

Creation of elephants camps service separately

The present position of Mahaut and Pachhuwa should be promoted in elephant's driver class I, II and III. Elephant's staffs work 2.5 – 2.8 times more than a civil servants and it is very difficult work. HMG should create "Elephants Camp Service" separately and create Elephants driver posts class I (Phanit) class II (Pachhuwa), and class III (Mahaut). The unnecessary post of Gazette Subba, Raut and Daroga can be deducted.

Mid-term

Breeding compartment establishment

A breeding pool should be developed separately outside the residential area of EBC. Boundary wall for breeding compartment should be built separately because wild bulls sometimes demolish infrastructures.

Observation tour

Observation tour for elephant's staff to India, Shrilanka, Thailand, Barma, Bangladesh, and Malaysia is necessary to enrich their knowledge.

Long-term

Grazing control in elephant breeding forest (EBF)

Grazing in existing EBC is heavy due to open access. Barbed wire fencing should be built around such forest to control the illegal grazing.

Grassland and fodder trees management

Grassland for elephants should be managed inside EBF where palatable grass should also be cultivated. Plantation of fodder species like *Ficus religiosa*, *Ficus bengalensis*, *Bambax cieba*, *Ficus benzamina* and Banana should be done inside EBF to need the forage deficit.

Scientific research

Scientific research on *ex-situ* conservation on elephants should be carried out. Genetic difference between calves by wild bull and domestic bulls should be studied at EBC.

Pond establishment

Ponds for calve wallowing, and sometimes water reservoirs and drinking purpose for elephants should be developed inside EBC.

Controlled Breeding

After meeting the estimated 130 elephants needed for the Terai protected areas, breeding activities of elephants should be controlled.

Medical treatment for elephants

Adequate medicine and vet medical compounder should be recruited for medical treatment of elephants. Training to elephant's staff regarding first aid vet should be given.

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Annex 1: Number of elephants in all Pas

SN	Name of elephant camp	No. of elephants	Bull elephants	Cow elephants	Calves	
					Bull	Cow
1	Koshi Tappu WR	10	---	10	----	----
2	Parsa WR	11	----	10	1	----
3	Chitwan NP	22	11	9	1	1
4	EBC	21	5	15	1	----
5	Bardiya NP	10	---	10	----	----
6	Kanchanpur WR	7	--	7	----	----
Total		81	16	61	3	1

Sources: Elephants and elephant's camps management report 2000

Annex 2: Number of elephants in private sector in Nepa/

SN	Name of hotel	Total # of elephants	Male	Female	Calf
1	Gaida Wildlife camp	8	0	7	1F
2	Machan Wildlife Resort	10	1	9	0
3	Tiger Tops Jungle lodge	15	3	12	0
4	Island Jungle Resort	6	0	6	0
5	Temple tiger Jungle lodge	9	0	8	1 M
6	Chitawan Jangle Lodge	10	0	10	0
7	Narayani Saffari	10	0	10	0
8	Tiger tops, Bardiya	6	0	6	0
9	KMTNC, Chitwan	6	0	6	0
10	KMTNC, Bardiya	2	0	1	1F
11	KMTNC, Central Zoo		0	1	0
12	Private elephants of outside hotel and lodge at Sauraha	21	NA	NA	NA
	Total	104	4	76	3