

Captive Elephant Healthcare Programme

Pilot Project Report



Captive Elephant Healthcare Programme

Pilot Project Report

Sponsored by

The Elephant Sanctuary

Hohenwald, Tennessee, USA

**Kushal Konwar Sarma
Parag Jyoti Deka
Apurba Chakraborty
Nandita Hazarika**



Wildlife Health Unit

THIS PROJECT WAS SUPPORTED BY

The Elephant Sanctuary

P.O. Box 393, Hohenwald, TN 38462, USA.

Phone +1-931-796-6500 Fax +1-931-796-4810

Email elephant@elephants.com Website <http://www.elephants.com>

FOR ADDITIONAL INFORMATION CONTACT

EcoSystems-India

NE Centre, 402 Swati Apts., G. S. Road, Christianbasti

Guwahati 781005, Assam, India.

Phone +91-361-234 4646 Mobile +91-98640 63637

Email mail@ecosystems-india.org

or

Dr Kushal Konwar Sarma

Gajamukta, No.1 Janapath, Khanapara

Guwahati 781022, Assam, India.

Phone +91-361-222 1682 Mobile +91-98640 63873

Email kushalkonwar@hotmail.com

© 2003 EcoSystems-India

Citation: Sarma K K, Deka P J D, Chakraborty A and Hazarika N. 2003. *Captive Elephant Healthcare Programme: Pilot Project Report*. Ecosystems-India, Guwahati.

Cover photographs: A. Christy Williams

Inside photographs: A. Christy Williams and Kushal Konwar Sarma

Layout: Goutam Narayan

CONTENTS

Executive Summary	ii
Project Team	iv
Acknowledgement	iv
Background	1
Project objective	1
Area of operation	2
Methodology	2
Camp activities	3
Medical procedures	5
History and biometry	5
Pathological tests	6
Health problems and treatments	7
Elephants in musth	9
Microchip implantation	10
Monitoring and evaluation	10
Assessment of impact	10
Constraints in project implementation	11
Future plans	12
References	12
<i>About EcoSystems-India</i>	<i>inside back cover</i>

Executive Summary

The states of Northeast India, especially Assam, have a long history and tradition of domesticating elephants for timber logging operations. Of the total captive elephants (about 3,500) in the country, the Northeast accounts for over half the population (about 55%). Following a central government ban on uncontrolled tree-felling activities in the region in 1996, about 1,800 working elephants became burden upon their owners, as there were no alternative means of using the animals. Since then the condition of many of these creatures has deteriorated. Apart from the medical attention given to the animals by the owners in emergency situations, no attempt has been made by either government or non-government agencies to provide services for the elephant healthcare in Assam.

To help the captive elephants in need of healthcare, the Wildlife Health Unit (WHU) of EcoSystems-India undertook a one-year pilot project in Assam, and the Captive Elephant Healthcare Programme (CEHP) was launched in May 2002. The primary objective was to render free healthcare services to some captive elephants of Assam by organizing field camps. It was envisaged that besides providing direct help to poorly maintained captive elephants, the findings of the Programme would also help to develop a long-term strategy for proper healthcare and welfare of the captive elephants in the northeastern India.

Eight geographical regions comprising contiguous or neighbouring districts in Assam were identified to conduct such camps. The camps were of 1-2 days duration, and were planned in collaboration with local veterinarians, non-governmental agencies (NGOs), and the Assam Forest Department. Twenty-five camps were held at 20 different sites wherein 159 elephants were treated. In addition, services were extended to treat critically ill elephants working for the state Forest Department.

The participating elephants were subjected to general health evaluation and fecal and/or urine screening, and specific health complaints were also attended to. Minor surgical procedures were carried out, and the animals were vaccinated against some endemic bacterial diseases. Medical examination of fecal samples revealed heavy and mixed parasitic infection in about 84% of the animals. The most commonly encountered surgical problems were *farra* gall, pododermatitis (*kari*), multiple abscesses in different parts of the body, gunshot wounds, overgrown tusks and toenails, and colonic impactions. A few elephants were treated for injuries inflicted by wild tuskers or rhinos. In addition to the 159 animals that attended the health camps, four domestic adult male elephants running amuck in the frenzy of *musth* were tranquilized, tethered and rehabilitated. Additionally, the CEHP personnel assisted the local Forest Department implant several other elephants with microchips under the Project Elephant programme of the union Ministry of Environment and Forests.

Since this was a pilot initiative, adequate provisions for follow-up monitoring was not kept. However, out of 158 captive elephants that attended the CEHP camps 50 of them were re-examined after a time gap and appropriate treatments were given. Help of local veterinarians were also taken to monitor these and other elephants and they were supplied with required medicines and instructions to follow-up the cases, wherever necessary.

The CEHP has been able to demonstrate that timely and preventive veterinary action can go a long way in maintaining the health of captive elephants. Clinical examinations and laboratory tests revealed that most of these animals have been deprived of basic preventive or curative treatment by a qualified veterinarian for years, contrary to best practices prevalent in developed countries. Thus the current project was a modest effort to extend basic healthcare and treatment to 158 captive elephants (about 8-9% of the estimated captive elephants population of Assam), with scope to extend benefits to the remaining captive population.

Besides the direct benefits to the elephants, the project has been able to contribute indirectly in terms of (i) capacity building of local veterinary professionals as well as veterinary graduates and students by providing an opportunity to enhance/develop their professional skills through exposure to handling both captive and wild elephants, (ii) creation of a database on baseline information on the participating elephants for compilation and further analysis, (iii) disease surveillance through medical investigations and incidence of various health related problems of the captive elephants recorded during the health camps, and (iii) documentation of traditional and local community practices for management of captive elephants in Assam. However, a systematic approach is required to document this unique and rich repository of indigenous knowledge that may be otherwise lost, if not recorded.

The project team was fortunate to have received support from different quarters for the successful implementation of the programme. While hurdles in logistics were easier to overcome, but the lack of medical equipment for routine diagnostic tests in the field was a major constraint.

The Captive Elephant Healthcare Programme has demonstrated that a combination of external funding (Elephant Sanctuary) and a regional agency like EcoSystems-India involved in extension activities for biodiversity conservation, with active participation from local community and the Forest Department could accelerate the process of providing basic healthcare for captive wildlife.

In this context, continuation of CEHP holds tremendous potential as only about 8-9% of the captive elephant population in the Northeast has been able to avail of the benefits of the healthcare camps. To ensure long- term sustainability, the programme can be expanded in the already selected regions in Assam, and also extended to other northeastern states. Future activities of CEHP could include camps with enhanced medical support (better investigative instruments and medicines), training to mahouts in modern healthcare and management practices, concurrent monitoring and evaluation of treated animals, process documentation, and information dissemination.

Project team

<i>Principal Investigator</i>	Kushal Konwar Sarma MVSc, PhD
<i>Co-Investigators</i>	Apurba Chakraborty MVSc, PhD Parag Jyoti Deka MVSc
<i>Advisors</i>	A Christy Williams MSc, PhD Goutam Narayan MSc, PhD
<i>Report compilation and editing</i>	Nandita Hazarika MA Parul Deka MA

Acknowledgement

Our sincere gratitude to The Elephant Sanctuary, USA, for their support in making Captive Elephant Healthcare Programme (CEHP) a successful initiative. We are deeply thankful to Dr A Christy Williams, WWF-Nepal, for his encouragement to undertake the programme and for providing valuable inputs in project planning and implementation. We appreciate Ms Carol Buckley of The Elephant Sanctuary for her keen interest in CEHP activities.

We are indeed grateful to fellow veterinarians Drs Dipak Sarma, Munmun Sarma, B K Goswami, N K Rajkhowa, Uma Tamuly, Prasanta Rava, D C Deka and Narendra Tiwari for their voluntary assistance with the camp activities including the follow-up of treated elephants. The kind co-operation of Vinay Yadav, Ramprakash Yadav, Debojeet Das, Jehrul Islam, S Rathore, S C P Singh and A K Gupta, all students of College of Veterinary Sciences, Guwahati, and Nilim Dutta is greatly appreciated.

We are grateful to the Forest Department, Govt. of Assam for providing logistics support. In course of the camps, we interacted with a number of elephant owners and mahouts, and would like to thank them for their participation.

Background

The states of Northeast India, especially Assam, have a long history and tradition of domesticating elephants. Of the total captive elephants (about 3,500) in the country, the Northeast accounts for about half the population (55%). Although the elephants are protected under the Schedule I of the India's Wildlife (Protection) Act 1972, which bans capture and trade of protected species, the elephants that were domesticated before the Act came into force, and their progeny, can be traded as livestock under a permit system authorised by the state Forest Departments.

For several decades the privately owned captive elephants were mostly engaged in the timber logging operations. Being the working and earning animals, such elephants usually enjoyed good care from their owners. When the exploitation of the forest resources became unsustainable, the apex court of India had to intervene by clamping a ban on uncontrolled tree-felling activities in the forests of the region in 1996. Consequently, about 2,000 elephants working in the logging operations became burdens upon their owners, as there were no alternative means of using the animals. The minimum expenditure required for maintaining an elephant, including the wages of a mahout, is about Rs. 10,000 (US \$ 215) per month, which is roughly equal to the per capita annual income in Assam. Under these circumstances the owners began to neglect their animals, particularly in terms of healthcare and general management. Therefore, the condition of many of these innocent creatures, a part of our ecosystem and culture, has deteriorated since 1997.

Moreover, captive elephants owned by the Forest Department and used for wildlife protection or tourism (e.g. in National Parks), or those kept in the zoos need help owing to the lack of resources with the authorities responsible for their upkeep. Apart from the medical attention given to the animals by the owners in emergency situations, no attempt has been made by either government or non-government agencies to provide services for the elephant healthcare in Assam.

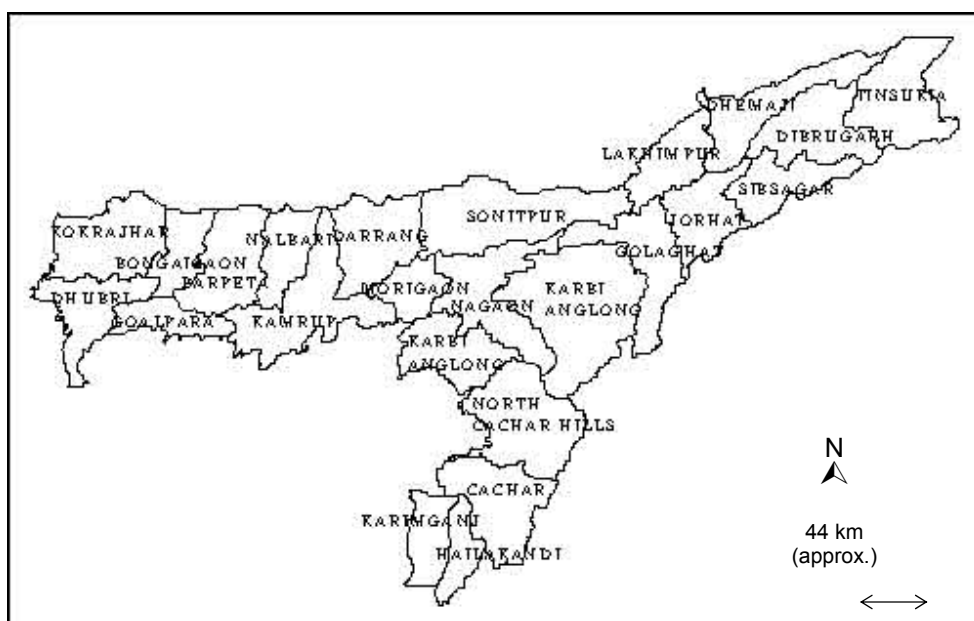
Project objective

To help the captive elephants in need of healthcare, the Wildlife Health Unit (WHU) of EcoSystems-India proposed to undertake a one-year pilot project in Assam, and the Captive Elephant Healthcare Programme (CEHP) was launched in May 2002. The primary objective was to render free healthcare services to some captive elephants of Assam by organizing field camps in different regions of Assam over a twelve-month period. Originally it was planned that only privately owned elephants would be treated. The Forest Department is the largest owner of captive elephants in Assam and it was assumed that the government owned animals had comparatively better access to healthcare. It was envisaged that besides providing direct help to poorly maintained captive elephants, the findings of the Programme would also help in development a long-term strategy for proper healthcare and welfare of the captive elephants in the northeastern India.

Area of operation

Eight geographical regions in different zones of Assam, comprising contiguous or neighbouring districts, and often separated by the most prominent physical feature of the state, the mighty Brahmaputra river, were identified under the programme (see the map below). Attempts were made to cover as many districts as possible under the pilot project and camps were organised each of the following regions:

- (i) North West (NW): Kokrajhar, northern Dhubri, Bongaigaon, Barpeta districts.
- (ii) North Central (NC): Nalbari, northern Kamrup, Darrang and Sonitpur districts.
- (iii) North East (NE): Lakhimpur and Dhemaji districts.
- (iv) South West (SW): Southern Dhubri, Goalpara and southern Kamrup districts.
- (v) South Central (SC): Morigaon, Nagaon, Karbi Anglong and Golaghat districts.
- (vi) South East (SE): Jorhat, Sivasagar, Dibrugarh and Tinsukia districts.
- (vii) South (S): North Cachar Hill, Cachar, Karimganj and Hailakandi districts.



The districts of Assam

Methodology

The sites for elephant healthcare camps were selected based on concentration of the captive elephant populations in different areas. The camps were conducted either on community land owned by people or on the property of the Forest Department. The following methodology was adopted to implement the pilot programme.

1. **Camp duration and supervision:** The camps were of 1-2 days duration, supervised and managed by a team of two or more qualified veterinarians and support personnel. The team traveled to the different camps assisted by local professionals.

2. **Publicity:** The information about the proposed camps was disseminated through a network of local contacts, elephant owners or local veterinarians. The contacts in respective districts were informed about the date, time and venue of each camp in advance.
3. **Health procedures:** Apart from attending to specific health complaints, the participating elephants were subjected to general health evaluation (Ashraf 1992) and fecal or urine screening (Benjamin 1985). In a few cases blood samples or skin scrapings were brought to the headquarters for further laboratory investigation. Minor surgical procedures were carried out, if necessary, and the animals were vaccinated against some endemic bacterial diseases.
4. **Monitoring and evaluation:** Being a pilot exercise, attempts were made to medically examine as many captive elephants as possible, to get a bigger picture and trends in the health status of the captive elephants in Assam. The existing network of elephant owners, local veterinarians and other contacts in the field were strengthened. It has been planned that, through extension of the above pilot Programme, health of the animals will be monitored through the network, and when problems are reported urgent investigations and specific actions would be initiated.



Elephants arrive at Harmoti camp, Lakhimpur

Camp activities

The elephant healthcare programme was formally launched on 19 May 2002 at the Assam State Zoo, Guwahati with the inaugural camp. This camp was organized at the zoo to better understand the needs of similar camps in remote areas and to render some assistance to the zoo elephants. Eight veterinarians participated in the event and treated 11 elephants, two of which were privately owned.

The free health camps were planned in collaboration with local veterinarians (private practitioners as well as those with government departments), local non-governmental agencies (NGOs), and the Assam Forest Department. Given the long association and rapport

with the elephant owners in the state, the project team was able to communicate the plans for free camps to the target groups, through local networks. In each of the project regions, leading owners were requested to arrange for mutually suitable time and venue to hold the camps, and to inform all the owners accordingly.

Initially, in some of the camps, the response was much below expectation. On investigation, it was learnt that fear and suspicion kept beneficiaries away. Many captive elephants of the state are not registered with the Forest Department, particularly those kept by indigenous communities such as *Rabhas*, *Misings*, *Morans* and *Singphos*, who traditionally rear elephants. While registration of captive animals is compulsory, it is estimated that less than 5% of captive elephants belonging to such communities is registered. Thus owners are apprehensive of authorities or activities involving participation of official agencies fearing punitive action. However, such reservations were allayed when the owners realized the true benefits of the camps. Subsequently, 24 other camps were held at 20 different sites wherein 159 elephants were treated (Table 1 and 2).

In addition to the proposed regional camps, the team members were invited by the Assam Forest Department to treat critically ill elephants working for protection and tourism task in some Protected Areas in the state (e.g. Manas, Kaziranga and Orang National Parks) or kept in the State Zoo. Although the original CEHP proposal did not include the government-owned elephants, help was extended to them when requested. The first camp was intentionally held at the Zoo on a trial basis to get familiarized with the procedures and possible requirements of such camps in remote areas.

Table 1. Age and sex of elephants examined at the healthcare camps

Adult			Sub-adult			Juvenile			Young			Old			Total		
MALE *	FEMALE *	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
45	72	117	5	9	14	10	8	18	4	2	6	4	0	4	68	91	159

Age Class (in years): Adult 12-60; Sub-adult 7-12; Juvenile 2-7; Young less than 2; Old over 60.

* N.B. 8 adult females were pregnant; 5 adult males experience annual musth; an adult male was a wild animal.

Table 2. Details of elephant healthcare camps conducted in Assam

S. No.	Camp Site	Region *	Month	No. of elephants examined	No. of fresh cases	Nos. re-examined
1	Assam State Zoo	SW	May '02	9	9	1
2	Kulshi	SW	May '02	6	6	
3	Hojai	SC	Jun. '02	1	1	
4	Panbari	SC	Jun. '02	3	3	
5	Panbari	SC	Jul. '02	1		

6	Pilingkata, Khanapara	SW	Jul. '02	2	2	
7	Margherita	SE	Aug. '02	14	14	
8	Manas	NW	Aug. '02	21	21	
9	Dibrugarh	SE	Aug. '02	1	1	
10	Sualkuchi	NC	Aug. '02	1	1	
11	Orang	NC	Sep. '02	15	15	
12	Assam State Zoo	SW	Oct. '02	16	7	9
13	Sonapur	SW	Dec. '02	2	2	
14	Mirza	SW	Dec. '02	3	3	
15	Rani	SW	Dec. '02	11	11	
16	Guwahati	SW	Dec. '02	14	12	2
17	NC Hills, Umrangsu	S	Jan. '03	4	4	
18	Kaziranga	SC	Feb. '03	8	7	1
19	Kaziranga	SC	Mar. '03	1		1
20	Lakhimpur, Harmoti					
21	Lakhimpur, Johing	NE	Mar. '03	31	31	
22	Manas	NW	Mar. '03	24	3	21
23	Orang	NC	May '03	15		15
24	Dudhnoi	SW	Jun. '03	2	2	
25	Pobitora	SC	Jun. '03	4	4	
Total				209	159	50

* N.B. See Area of Operation above



Body index measurement

Medical procedures

HISTORY AND BIOMETRY

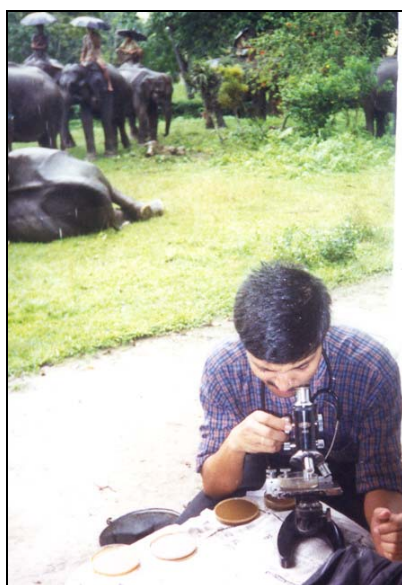
The medical history of all the participating elephants was recorded after registration at the respective camps, except where manpower did impose certain limitations. The parameters documented included their birth details (captured from the wild or born in captivity), body measurements, breeding particulars, incidence of *musth* and jobs performed. The information thus collected can be compiled for analysis that would reveal trends on the physical characteristics of the elephants and husbandry practices in Assam. However, the current data is inadequate to make in-depth analysis, and it is envisaged that continuation of the CEHP for a few more years would provide the necessary database. It must be added that many elephants were observed to be in poor health, in all possibility owing to inadequate diet and healthcare.

PATHOLOGICAL TESTS

Fecal sample examination: On-the-spot examination of fecal samples revealed heavy and mixed parasitic infection in the elephants. Almost 84% (71 of 85) of the animals tested showed nematode and/or trematode infections (Table 3), and most commonly observed ova were of *Paramphistomum*, *Fasciola* and *Strongylus* species. Though all the positive cases were treated with appropriate anthelmintic drugs (Fenbendazole against roundworms and Oxytoclozanide against the flukes), the prescribed follow-up examination after six months was not always possible as it was beyond the project's purview. Notwithstanding, the owners were motivated to get their elephants examined six months after the treatment by local veterinarians who were briefed on recommended course of action.

Table 3. *Captive elephant fecal screening for parasitic ova*

No. of elephants evaluated	Elephants infested with Nematodes	Elephants infested with Trematodes	Elephants infested with both Nematodes and Trematodes	Elephants with no parasitic ova
85	28	24	19	14



Fecal sample examination at a field camp

Ectoparasites: Other parasitic diseases observed were *Cutaneous filariasis* and *Cobboldiasis* in a few cases. *Cobboldia* infestations were found mostly in the elephants of the Northern bank of Brahmaputra, and may be attributed to the prevalence of elephant bot flies (*Cobboldia elephantis*) in the area. After treating the affected animals, the mahouts or owners were advised to take preventive measures, such as, post-feeding cleaning of the tusk / tush bases where the flies lay their eggs.

Other tests: A skin scraping brought to the headquarters from Lakhimpur camp showed fungus infection in the elephant and antifungal treatment was rendered to the elephant subsequently through the local contact. Hematological and biochemical investigations were carried out on a couple of blood samples collected from the zoo elephants suffering from anasarca (generalised edema), and although 36 parameters were studied in an autoanalyzer, no conclusive diagnosis could be made for the reasons behind the symptom.

HEALTH PROBLEMS AND TREATMENTS

Many of the elephants were found be suffering from conditions that required surgical attention. The most commonly encountered surgical problems were *farra* gall, pododermatitis (*kari*), multiple abscesses in different parts of the body, gunshot wounds, overgrown tusks and toenails, and colonic impactions.

Farra gall: Twenty-three elephants were found with different stages of *farra* gall affliction, including a cow that was suffering for over a decade. This condition is caused by extended use of ill-fitting logging or riding harness, particularly under hot and humid conditions (Evans, 1910). Initially a soft swelling of varying size develops into large painful abscess on the back of the animal, and often spreads to the chest. If not treated this can even be fatal for the animal. Follow-up examination and enquiries, often with the help of local veterinarians, proved that all the animals treated under CEHP camp recovered satisfactorily.



Pus draining from farra gall infection

Pododermatitis: Foot rot or *kari* was the second-most common affliction in terms of incidence and intensity of discomfort. Poor husbandry practices are directly responsible for foot disease in captive elephants (Schmidt, 1986). When elephants are tethered at the same place on the foot continuously for long periods, the bacterial load of the area increases manifold, with saprophytic organisms attacking the wet and soft keratinized tissues in and around the soles. These lesions are later complicated by pyogenic and fungal infections.

Though lesions are mostly proliferative, degenerative lesions were also seen in the animals examined at CEHP camps. Moreover, improper landing and breaking of the pain-affected feet during strides affects the normal wear and tear and this often leads to deformed toes.



Application of potassium permanganate and copper sulphate to foot-rot

Abscess: Multiple abscess formation over the body was another commonly observed problem among the captive elephants. Such a condition, generally attributed to poor overall hygiene, is also caused by administration of intra-muscular injections without proper aseptic care (Mikota *et al.*, 1994). Indurations and fistulations were also seen, a result of past improper treatment of abscess. Very often, poorly trained field veterinarians, unwilling to use anesthesia, end up incising immature abscesses or more frequently just drain the abscess without breaking the pyogenic membrane or curetting them properly, leading to such complications.

Other health problems: Overgrown tusks and toenails were frequently encountered among the elephants that were examined and treated. Other conditions included a few cases of split toe and tail gangrene, and one case each of gunshot wound, obstruction in trunk (probably a tumor), otitis, cataract, blindness, dental decay in a sub-adult male, congenital meningocoel and colonic impaction. A few cases of limb-joint problems in the carpus or stifle joint (bursitis), usually caused after injuries suffered during logging operations, were also treated. A couple of elephants were treated for geophagia.

A few elephants were treated for injuries inflicted by wild tuskers or rhinos. There was a case of self-inflicted temporo-mandibular dislocation in a tusker that tried to free itself by biting and pulling the metal chain with which he was tethered. The negligent mahout had neither fed him nor allowed him to go for foraging for a long period. Some efforts were made to correct the problem, but it was not successful. The injury ultimately proved fatal as the elephant could not pick up or eat anything.



Male elephant wounded by a wild rhinoceros

Trimming of overgrown tusks

ELEPHANTS IN *MUSTH*

In addition to the 159 animals that attended the health camps, four domestic adult male elephants running amuck in the frenzy of *musth* were tranquilized, tethered and rehabilitated on the request of the Assam Forest Department. Another wild bull in *musth*, trapped in the muddy bank of the river Brahmaputra, was rescued and released in the Dibru-Saikhowa National Park in Upper Assam (Dibrugarh camp).

Of the 45 adult males that attended the health camp, only 5 of them were reported to experience *musth* every year. It is interesting to note that the number of captive elephants experiencing *musth* had increased immediately after the ban on logging operations in 1996 but it declined sharply after a couple of years. The possible reasons could be poor nutrition, owners' inability to handle virile bulls, and sale of tuskers to Nepal or other states (Sarma 2002).



Tranquilized tusker in musth

MICROCHIP IMPLANTATION

During the project period, team members had an opportunity to participate in a programme of Project Elephant of the union Ministry of Environment and Forests, for free registration of captive elephants and implantation of microchip transponders in Assam. In the CEHP camps held at Lakhimpur, Margherita, Dudhnoi, Rani, and Guwahati all the attending elephants

were marked with transponders. Additionally, the CEHP personnel assisted the local Forest Department implant several other elephants with microchips.

Monitoring and evaluation

Since this was a pilot initiative, adequate provisions for follow-up monitoring was not kept. However, out of 158 captive elephants that attended the CEHP camps 50 of them were re-examined after a time gap and appropriate treatments were given. Help of local veterinarians were also taken to monitor these and other elephants and they were supplied with required medicines and instructions to follow-up the cases, wherever necessary.

Assessment of impact

The CEHP has been able to demonstrate that timely and preventive veterinary action can go a long way in maintaining the health of captive elephants. Clinical examinations and laboratory tests revealed that most of these animals have been deprived of basic preventive or curative treatment by a qualified veterinarian for years, contrary to best practices prevalent in developed countries. Thus the current project was a modest effort to extend basic healthcare and treatment to 158 captive elephants (about 8-9% of the estimated captive elephants population of Assam), with scope to extend benefits to the remaining captive population.

In addition to the direct benefits to the elephants, the project has been able to contribute indirectly in terms of Capacity building, Database creation, Disease surveillance and Documentation.

Capacity building: The project sought alliance with local veterinary practitioners as well as veterinary graduates and students in the planning, implementation and monitoring of the health camps. This has provided an opportunity to enhance/develop their professional skills through exposure to handling both captive and wild elephants. Given the small number of elephant vets in the country, building of such expertise will be an added advantage.

Database creation: Despite a long history of elephant keeping in India, reliable baseline information on captive elephants, particularly about their breeding history, morphometry, disease record, etc. is grossly inadequate. In the current project, baseline data on the participating elephants was recorded for compilation and further analysis. It is envisaged that such information collected over the next three years or more would yield a well-researched database on the captive elephants of the northeastern India, contributing to scientific output.

Disease surveillance: Medical investigations and incidence of various health related problems of the captive elephants recorded during the health camps constitute an important outcome of the project. Such an exercise is probably a pioneering attempt in the region to methodically track the health related problems of the captive elephant population of Assam so far. Such records will lend support to formulation of health cover strategies for elephant population in future.



Examination of elephants

Documentation: The camps presented an opportunity to gain insights into the traditional and local community practices for management of captive elephants in Assam. However, a systematic approach is required to document this unique and rich repository of indigenous knowledge that may be otherwise lost, if not recorded.

Constraints in project implementation

The project team was fortunate to have received support from different quarters for the successful implementation of the programme. While hurdles in logistics were easier to overcome, but the lack of medical equipment for routine diagnostic tests in the field was a major constraint. Much of the apparatus used was either hired or borrowed, subject to availability, which in turn affected the scheduling of the camps. Further, the dependence on the state Forest department for the tranquilizer gun, proved to be a cumbersome bureaucratic task, very often the equipment reaching the camp too late for use. For future camps, a mobile medical field-testing kit, including the gun kept with the project team permanently, would obviate the need to plan camp activities around the availability of medical equipment. Additionally, constant availability of a 4-wheel-drive vehicle for the project would significantly improve response time, particularly in any emergency, veterinary or otherwise (e.g. restraining a rogue elephant).

Future plans

The Captive Elephant Healthcare Programme has demonstrated that a combination of external funding (Elephant Sanctuary) and a regional agency like EcoSystems-India involved in extension activities for biodiversity conservation, with active participation from local

community and the Forest Department could accelerate the process of providing basic healthcare for captive wildlife.

In this context, continuation of CEHP holds tremendous potential as only about 8-9% of the captive elephant population in the Northeast has been able to avail of the benefits of the healthcare camps. To ensure long-term sustainability, the programme can be expanded in the already selected regions in Assam, and also extended to other northeastern states. Future activities of CEHP could include camps with enhanced medical support (better investigative instruments and medicines), training to mahouts in modern healthcare and management practices, concurrent monitoring and evaluation of treated animals, process documentation, and information dissemination.

We have observed that many of the frontline mahouts have left their jobs probably due to the financial fallout of the ban on timber industries, as it is not monetarily rewarding any more. As a result, the grass-cutters had to take over the job of mahouts, which is not easy and requires a lot of training and knowledge. Therefore, we have developed a strong feeling that if the working mahouts and the elephant owners can be trained to the modern concept of healthcare and management, it will really help the well being of the elephants and also enhance the quality of life of the captive elephants.

References

- Ashraf N V K. 1992. *Procedures for monitoring wildlife health and investigating diseases - A field guide*. Wildlife Institute of India, Dehradun.
- Benjamin M M. 1985. *Outline of Veterinary Clinical Pathology*. Kalyani Publishers, New Delhi.
- Evans G H. 1910. *Elephants and their diseases*. Government Printing, Burma.
- Mikota S K, Sargent E L and Ranglack G S. 1994. *Medical management of the Elephant*. Indira Publishing House, Michigan, USA.
- Sarma K K. 2002. Musth in Asian Elephants. Central Zoo Authority, New Delhi.
- Schmidt M. 1986. Proboscidea (Elephants). In *Zoo and Wild Animal Medicine*. Ed. Fowler M E, W B Saunders Co., Philadelphia.



A TRUST FOR BIODIVERSITY CONSERVATION

Guided by the anticipation of the new millennium and by the practical plans to meet the needs of the society, the EcoSystems-India Trust was registered in 2000. The Trust grew in response to the urgent and growing need to conserve the rich natural resource base of Northeast India in the face of the unsustainable development. The mission of the Trust is to promote conservation of natural biodiversity with special thrust on threatened and endangered wildlife and their habitats, and to encourage sustainable and efficient management of natural resources

To achieve its mission, the Trust aims to (a) to organize, promote and conduct scientific research to assist the conservation of the natural biological diversity; (b) to initiate or undertake activities for conservation of threatened and endangered wildlife and their habitat; (c) to undertake and conduct research and develop appropriate applications for optimum utilisation of renewable and non-renewable natural resources; (d) to establish a harmonious and ecologically sustainable relationship between the nature and the people living around or visiting areas of important biological diversity including national parks and sanctuaries; (e) to encourage active participation of women and economically backward individuals or communities in implementation and management of development activities; (f) to disseminate knowledge of biodiversity conservation and sustainable use of natural resources through print, electronic and audio-visual media, and by conducting capacity building programmes, training, workshops, and meetings; and (g) to actively collaborate and work with one or more individuals or organisations having similar or allied objects for mutual benefits.

To translate the objectives into action, the Trust seeks cooperation and action through partnerships with various stakeholders. It draws its strength from the experience and expertise of its members drawn from multidisciplinary fields. Its activities are carried out through its four working units:

- Rare & Endangered Species Conservation Unit (RESCU)
- Wildlife Health Unit (WHU)
- Capacity Building & Extension Unit (CBEU)
- Natural Resources Management Unit (NRMU)

Northeast Centre: 402 Swati Apts. Christianbasti, G. S. Road, Guwahati 781005, Assam, India.

phone (0361) 234 4646 **mobile** 98640 63637 **email** mail@ecosystems-india.org

Reg. Office: A44/3 SFS DDA, Saket, New Delhi 110017, India.

