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Elephant Health Status in Thailand: The Role of Mobile Elephant Clinic and Elephant Hospital

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Background

In the beginning of the 20th century there were about 100,000 domesticated elephants in Thailand (Langka 2000). Elephants were originally found throughout the country (Oliver 1978; Lair 1997), especially in the north of Thailand where there were abundant teak forests. At present there are 3456 domesticated elephants in Thailand (P. Churplaivech, pers.comm.) and the population seems to be stable.

In 1884 British companies started the teak logging business in Thailand and founded the Forest Industry Organization (FIO) in 1947. In 1969 FIO established the Young Elephant Training Center in Lampang as the first school for training elephants for logging.

The status of domesticated elephants in Thailand turned into a crisis when the government banned logging in 1989. Elephants all over the country suddenly became unemployed. The owners had to find other jobs for their elephants to earn a living. Some were used in the tourist business, moving to the big cities for street – wandering. They earned an income by selling elephant food, for the tourists to feed the elephants.

In 1992, FIO established the Thai Elephant Conservation Center (TECC). Currently it consists of an elephant hospital, a Mobile Elephant Clinic (MEC), elephant reintroduction project, plantations of elephant food, 'Last Home for Elephants' (rehabilitation center) and an Elephant Camp for tourism.

The MEC started in 1999, and the Elephant Hospital officially opened in 2000, both offering free treatment to domesticated elephants from all over Thailand. The budget for treatment was supported by the Ministry of Natural Resources and Environment and public donations. Elephants in remote areas in the case of short term treatment are serviced via the MEC which logs in approximately 70,000 km a year. It was supported by the Royal Society for the Prevention of Cruelty to Animals (RSPCA) and the World Society for the Protection of Animals (WSPA) in 1999-2001 and 2005-2008, respectively.

The former Young Elephant Training Center was closed, and developed into the Elephant Rehabilitation Center in 2000, where elephants are living in the Last Home for Elephants. These include old, disabled, blind, unwanted or dangerous elephants as well as elephants confiscated during illegal logging (Fig. 1).



Figure 1. Elephant at the Rehabilitation Center (The Last Home for Elephants).



Figure 2. Map of Thailand showing the placement of elephant hospitals.
NEI = National Elephant Institute
DLD = Department of Live stock Development

In 2002, TECC became the National Elephant Institute (NEI) with the purpose of enlarging the scope of elephant conservation and relieving the various problems. The main reason for establishing the NEI was to develop elephant conservation in a sustainable way and to preserve the local traditions including local wisdom and knowledge associated with elephants. Her Royal Highness Princess Galayani Vadhana accepted the NEI under her patronage. The NEI has collaborated with other government and non-government organizations for improving elephant conservation in Thailand in terms of consulting, and exchanging data, skills and knowledge. At present there are four government elephant hospitals in Thailand:

1. Lampang (Northern region), TECC/NEI.
2. Surin (North Eastern region), the Department of Livestock Development.
3. Nakhonpathom (Central region), Faculty of Veterinary Medicine, Kasetsart University.
4. Kanchanaburi (Western region), Faculty of Veterinary Medicine, Mahidol University.

Further there are a few private hospitals for elephants and four organizations are running mobile elephant clinics, which collaborate with each other (Fig. 2).

Materials and methods

The diagnosis, treatment and outcome of treatment in NEI hospital and MEC were recorded from 2005-2008. For elephants treated more than once, a treatment for new disease/symptoms was recorded as a new case. The age of the elephants was given by the mahout, or if unknown, was estimated by veterinarians based on size of the elephant. The body condition of elephants was estimated based on a scoring system based on six parts of the elephant body with total scores ranging from 1=poor to 5=fat.

The MEC has provided health check, prophylactic and curative treatment to 3129 domesticated elephants (Fig. 3).

Results

During the study period, 3129 elephant treatments were recorded by the MEC. Of these 2210 were of females and 919 were of males. The cases according to working conditions were; tourist camps (2032), logging industry (464), and other jobs including living in zoo, staying with some elephant projects or jobless (633). The 3129 elephant treatments were of 1386 elephants, representing approximately 40% of the domestic elephant population in Thailand. Of these 154 (11.1%) were so affected that they were transferred to the NEI hospital. In addition, there is a tradition for de-worming twice a year by oral application, which is simple and safe. The annual number of cases treated is given in Table 1.

Eight of the elephants, which were attended in the eld died:

- Two females died after having dystocia for a week. Dystocia was dangerous and very

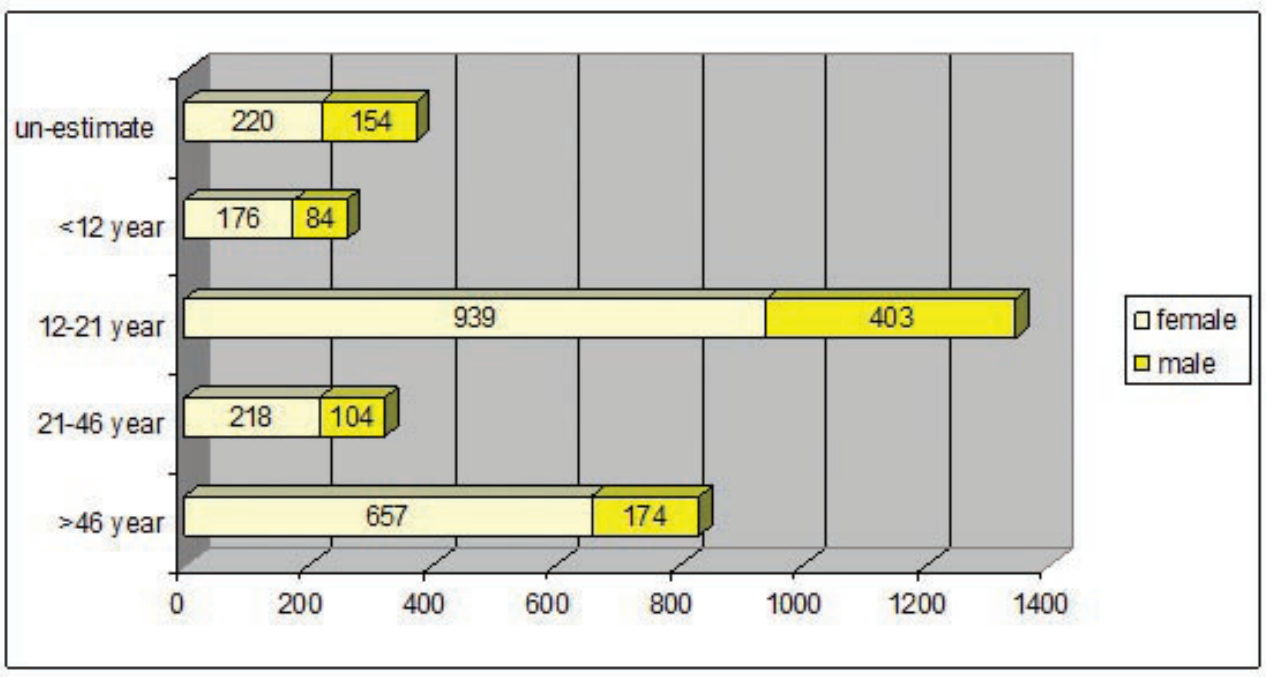


Figure 3. Age and sex distribution of 3129 cases treated by the MEC.

difficult to treat. In one female the amniotic sac was visible for a few days with bad smell and the calf was sometimes visible. The female tried but could not expel the calf. The other female was similar but the calf was not visible.

- A baby died a few hours after birth of unknown causes.
- One female died because another female attacked her. Cause of death was shock from internal bleeding with broken ribs and neck.
- A three year old female got diarrhea and died within a few days.
- Three males in the tourist camp were treated for dyspepsia, but finally died. At necropsy impaction of colon was observed.

Most commonly seen ailments were wounds and abscesses, such as shoulder abscesses caused by harnesses, wounds around the ears and feet caused by controlling equipment such as hooks, ear halters, hobbles, chains, ropes, wire ropes, knifes and other special equipment, and tail wounds from bites by other elephants. However, the wounds were not problematical to manage as gastro-intestinal and reproductive problems.

Table 1. Comparison of elephant cases treated by MEC and NEI hospital.

Year	MEC	Hospital
2005	363	94
2006	362	67
2007	296	62
2008	365	60
Total	1386	283

Gastro-intestinal problems were associated with feeding. Elephant food was often contaminated with the insecticide and fertilizer. If elephants are fed with such contaminated food, fermented food, or too much food, they developed dyspepsia and constipation. One baby died from *E.coli* infection in the small intestine, established by necropsy and culture.



Figure 4. Eye dysfunctions are seen frequently.

Table 2. Diagnosed conditions in the current study and previously (Phaungkam *et al.* 2002).

Diagnosis	2005-2008		1999-2001	
	#	%	#	%
1.Wounds and abscesses	265	19.1	89	19.2
2. Poor condition (weak, dehydration ,body condition score <2)	244	17.6	107	23.1
3. Ecto-parasites	207	14.9	151	32.5
4. Eye (conjunctivitis, corneal ulcer, opacity, uveitis, cataract)	196	14.1	35	7.6
5. Musculoskeletal problems (lameness, bone fracture)	136	9.8	0	0
6. Gastro-intestinal (dyspepsia, constipation, colic, diarrhea)	108	7.8	26	5.6
7. Tusk problems (osteodendritis, pulpitis)	58	4.1	11	2.4
8. Skin problems (fungus, allergy)	51	3.6	0	0
9. Reproductive (musth, dystocia, abortion, vaginitis, neonatal)	49	3.5	12	2.6
10. Foot problems (cracked nail, nail overgrowth, foot-pad cracking)	44	3.1	17	3.7
11.Other causes	28	2.1	0	0
Total	1368	100	464	100

Nutritional problems were often seen among elephants in poor condition, and were often associated with parasites, wounds or infectious diseases.

Elephants with eye problems (Fig. 4) were difficult to treat because they did not easily accept introduction of medicine into the eyes except well controlled elephants or under sedation. Although these problems never killed elephants, they may become blind. Table 2 provides the percentage of various diseases recorded by the MEC during the first two years of work from 1999-2001, which consisted of 464 elephants (slightly modified from Phaungkum *et al*. 2002) and the study period.

Hospital

During 2005-2008, 283 elephant treatments were recorded at the NEI hospital with 239 cases of recovery (84.5%). Seventeen elephants died and 27 elephants were still under treatment at the end of the study period. On average the elephants spent 2 months at the hospital. Of the 283 elephants 154 were sent to the NEI hospital via the MEC and the rest were referred by other veterinarians from all over Thailand.

Gastro-intestinal problems were the most serious and the major cause of death (Table 3). Sixty eight elephants presented with symptoms of dyspepsia, constipation, diarrhea and anorexia. In one case of diarrhea caused by protozoan infection (*Balantidium* sp.), the elephant had bloody diarrhea for 36 hours before it died.

Wounds and abscesses (Fig. 5) were often seen but the elephants usually recovered well on treatment. One male elephant with open wounds from gunshot died from septicemia.

It was found that elephants in poor condition with malnutrition had lower recovery rates. A common reason was old age, as when their last teeth were worn out they could not digest food and became weak. Infectious diseases such as *Mycobacterium bovis* were seen twice, diagnosed by necropsy and culture.

Hard work may cause musculo-skeletal problems. One elephant died from a fracture of the femur caused during work at a logging camp and died a few months later from septicemia.

Reproductive problems including dystocia also caused elephant deaths (recovery rate around

Table 3. Diagnoses of elephants treated in NEI hospital (2005 -2008).

Diagnosis	2005	2006	2007	2008	Total	
					N	%
1. Gastro-intestinal problems	32	17	8	11	68	24.0
2. Wounds and abscesses	19	13	15	13	60	21.2
3. Poor condition	10	9	12	9	40	14.1
4. Musculoskeletal problems	10	7	12	10	39	13.8
5. Reproductive problems	5	5	5	1	16	5.7
6. Eye problems	5	4	4	3	16	5.7
7. Tusk problems	5	3	1	2	11	3.9
8. Ecto-parasites	3	3	2	2	10	3.5
9. Foot problems	0	3	0	6	9	3.2
10. Skin problems	3	1	0	3	7	2.5
11. Growths etc. (cysts, fibromas, papilloma)	1	2	2	0	5	1.8
12. Urinary problems (renal failure, bloody urine)	1	0	1	0	2	0.7
Total	94	67	62	60	283	100



Figure 5. Wound-abscess in Thai elephant.

73%). The sex, age and cause of death of 17 elephants are given in Table 4.

Discussion

Most ailments among domesticated elephants were work related. The 1386 elephants treated by the MEC represented about 40% of the population of domesticated elephants in Thailand. Therefore the records from MEC provide a representative picture of the health problems among domesticated elephants in the country. This statement is further supported by the problems recorded in the first 2 years of work in the MEC as the types and proportions of problems were similar to what was recorded during the current study.

Table 4. Causes of elephant deaths in NEI hospital (2005-2008).

#	Sex	Age	Cause of death
1	Male	35	Septicemia from chronic wounds
2	Female	40	Neurologic problems
3	Female	45	Dystocia
4	Male	5	Colic
5	Female	40	Colic
6	Female	47	Aging disease
7	Male	3	Septicemia
8	Female	35	Septicemia and infectious disease
9	Female	50	Septicemia from wound and infectious disease
10	Female	5	Enteritis
11	Male	30	Colic
12	Male	38	Colic
13	Male	41	Colic
14	Female	52	Esophageal obstruction
15	Female	30	Neurologic problems
16	Female	70	Septicemia,aging disease
17	Male	48	Broken leg

The common occurrence of various problems related to work gives a strong indication of the need to educate people working with elephants on the causation and prevention of such problems, and the immediate treatment of problems preventing their worsening. Therefore education of people working with elephants is essential if conditions for the domesticated elephants in Thailand are to be improved.

In efforts to address this, NEI veterinary staff provides advice and instructions. The NEI has also written a mahout care manual (Phaungkham *et al*. 2005) where the mahouts can read about elephant care in the Thai language. To increase immediate care of minor problems, a first aid kit has been developed. The "mahout box" is given to mahouts working in the tourist camps or in the forest. It contains first aid medicine (antiseptic, local antibiotic, boric acid for eye washing, eye ointment and eye drops), soap, vet number contact and medicine manual used for basic treatment.

A training program (sponsored by the East Asian Company, Denmark) has been initiated. The program includes a three day workshop for approximately 40 mahouts. Four workshops including mahouts from all over Thailand are planned in the future.

We conclude that a Mobile Elephant Clinic which can quickly come out to the site of an ailing elephant, in combination with a hospital for more serious cases, provide an ideal system for the treatment of domestic elephants (Figs. 6 & 7).

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Figure 6. Working with the MEC in the field.

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Figure 7. Working with the MEC in the field.