

Some Remarks on the Success of Artificial Insemination in Elephants

Fred Kurt and Joachim Endres

European Elephant Group (EEG), Munich, Germany

Introduction

In North America reproductive technologies such as artificial insemination (A.I.) have become high priorities for increasing reproductive success in captive elephants (e.g. Kiso *et al.* 2007). However, the results achieved so far are rather sobering as shown by a few data. Between 1st Jan. 1999 and 31st Jan. 2008 205 captive elephants (124 Asian, and 81 African elephants) have been born in western facilities that partake in the European Endangered Species Programmes (EEP) and the North American Species Survival Plan Program (SSP). According to the data bank of the EEG 184 neonates of both species were delivered following natural mating and 21 following A.I. (Kurt & Endres 2008) The sex ratio of neonates subsequent to natural mating was 87 males, 92 females, and 5 of unknown sex. Following A.I. the sex ratio read 17 males and 4 females. The rate of stillbirths after A.I. was 33.3% and hence three times as high as after natural mating (for details see Table 1).

In the countries of origin first A.I. experiments

were carried out in the 1990th in Myanmar (Mar, pers. com.) And since then 2 captive bulls have been born after A.I., one on March 7th 2007 in Lampang (Thailand) and one on April 30th 2003 in Qinling Wildlife Park (Xi'an, China) that died on December 26th 2005. Out of all 23 (18 males, 5 females) African and Asian elephants born world wide following A.I. so far to date, 13 still lived in May 2008, 12 males and 1 female.

According to the database of the EEG there are presently at least 3 Asian elephants pregnant due to A.I. in the international zoo world (1 each in Europe, North America and Australia) and 2 African ones in North America. A third female had a miscarriage in August 2008 about 7 months after A.I. However, the number of females used for A.I. experiments seems to be at least 3 times higher than the number of females getting pregnant and sometimes experiments with a particular female are repeatedly carried out over periods of at least 7 years. These actions increasingly attract the interest of welfare NGOs, which often rightfully criticise the brutal training methods used to make to make the animals

Table 1. Number of births from 1.1.1999 - 31.1.2008 after natural mating (N.M.) and artificial insemination (A.I.) in Europe and Israel (EEP) and USA and Canada (SSP).

		<i>Loxodonta africana</i>			<i>Elephas maximus</i>			Total
		EEP	SSP	total	EEP	SSP	total	
Number of births	N.M.	49	15	64	77	43	120	184
	A.I.	3	14	17	2	2	4	21
	Total	52	29	81	79	45	124	205
Sex ratio after N.M.	Males	23	5	28	43	16	59	87
	Females	25	9	34	33	25	58	92
	Not known	1	1	2	1	2	3	5
Sex ratio after AI	Males	3	10	13	2	2	4	17
	Females	0	4	4	0	0	0	4
Stillbirths after N.M.	N	2	1	3	8	9	17	20
	%*	4.1	6.7	4.7	10.4	20.1	14.2	10.9
Stillbirths after A.I.	N	-	6	6	1	-	1	7
	%*	-	42.9	35.3	50.0	-	25.0	33.3

*Stillbirths as percentage of the value of all births in the relevant category.

amenable for the A.I. procedures.

Although we agree that studies concerned with A.I. have added considerably to the knowledge of reproduction biology in elephants the EEG maintains a critical view, since neither an extremely high neonate mortality nor an extremely male biased sex ratio can be favourable for preservation of the species in captivity. If an increasing reproduction rate is wanted in Asian countries of origin, attention should be concentrated on a number of more successful breeding centres without A.I. as e.g. the Pinnawela Elephant Orphanage in Sri Lanka or the Royal Elephant Kraal at Ayutthaya in Thailand.

The Pinnawela herd grew from about 30 animals in 1983 to about 70 in 2003 from orphans found in the wild but also through captive propagation. Within this period 12 females gave births to 22 offspring (12 males 10 females). The neonate mortality reads 4.5% (Kurt & Garai 2007) At the Ayutthaya Kraal harbouring presently 75 elephants (22 males and 53 females), 37 neonates were registered between February 2000 and January 2008 (19 males, 18 females). They were born by 25 females and fathered by 7 bulls of the Kraal and 4 bulls from other owners (Unknown

2008). The neonate mortality was 13.5%, i.e. similar to the respective value from western facilities following natural mating and far below of the neonate mortality known from offspring born after A.I.

References

Kiso, W.K., Brown, J.L., Schmitt, D.L., Olson, D.J. & Pukazhenti B.S. (2007) Current Investigations of Asian elephant semen in North America. *Gajah* **26**: 31-33.

Kurt, F. & Endres, J. (2008) Elefantenhaltung und das Dilemma mit der künstlichen Besamung. *Elefanten in Zoo und Circus Munich* **13**: 1-8.

Kurt, F. & Garai, M.E. (2007) *The Asian Elephant in Captivity*. Cambridge University Press India, New Dehli.

Unknown (2008) *Studbook of the Royal Elephant Kraal, Ayutthaya*. www.elephantstay.com.

Corresponding author's e-mail:
fred.kurt@t-online.de



Young bull mating at Periyar Tiger Reserve, Thekkady, India
Photo by Chelliya Arivazhagan