



Breeding management of Asian elephants

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Range countries

Breeding of captive Asian elephants in range countries is varied and based on the regular work and religious believes. In northern and southern India, elephants which belong to a Hindu institution or private section, are prohibited to breed; while in Buddhist countries such as Sri Lanka, Myanmar and Thailand no such a regulation exists. However, the traditional methods across Asia were to breed captive cows with wild bulls. In Myanmar timber elephants, breeding and captive born were fruitful with the average birth rate of 7.1% per year per mature female during 1991-1995 because the resting camps contained both bulls and cows, therefore, mating could occur anytime. This situation is the same in the Elephant Orphanage at Pinnawala village (EOP), Sri Lanka, where interaction and breeding occur during the free grazing period and bathing time with the birth rate of 20% per year per mature female. In Tamilnadu Forest Department camp, Southern India, elephant groups compose of adult cows, calves and bulls at various ages, which are alike the social structure of wild herds. The camp also locates in or aside forest, where the group forages during the night time, and cows could be bred with either captive or wild bulls, and resulted in the birth rate of 13% per year per mature female. Both Sri Lankan and Indian captive elephant facilities have a high birth rate close to that of wild elephants in South India, which is 21% per year per mature female, or ~1 lived calf born per mature cows every 5 years.



From the fecundity success mentioned above, the major factors in captive breeding accomplishment are the chance of inter-sexual contact, where estrus detection and mating will be met, with the favourable environment for elephants.

Thailand

Changes in elephant husbandry have occurred in Thailand in response to the new work activities. This has had an impact on several aspects of elephant health management, but in particular, it has affected elephant reproductive management. In the past, after a 9-month period of work both male and female timber elephants would have had a rest period in the summer (March-May) that was called “Pang Ram”. During that time, they would be placed in the forest to forage and sometimes mate. Calves often were produced under this system. However, since logging industry was banned, most captive elephants have changed to the new working situation. Today, this breeding technique is no longer appropriate as elephants are now working year round, particularly in the tourist industry. In addition to the logistical concerns related to tourist camp operations, male elephants that have long tusks must be kept under close observation to prevent illegal cutting and theft. And managers are loath to risk damage to females from unrestrained males, which can occur using the forest breeding method.

Currently, one of the breeding strategies is that a single female elephant suspected of being in estrus (based on subjective observations) is put with the breeding bull for a period of several hours. If the bull shows interest in the female and tries to copulate, the mahout would let the bull mate. If not, the bull and female elephant would be brought back to work. Another captive elephant breeding method uses the flehmen response of male elephants as they smell urine from female elephants to determine if the female is in estrus. The



implementation of this approach, commonly referred to as the “urine test”, varies among camps. Thus, one breeding strategy is to stand 6 to 8 female elephants in a row every morning and let 2 or 3 bulls stand behind the females to “test” their urine. If any female evokes interest by more than one bull based on male flehmen or other courtship responses (e.g., penis protrusion, erection, mounting attempts), she is presumed to be in estrus, and will be brought to stay with a bull during the daytime in the forest or breeding ground for a week or more. They are observed each day during the mating period. Mahouts have reported copulations up to 13 times during a mating period, which typically lasts several days but sometimes weeks. If mating is not observed within a couple-day period or the bull becomes too aggressive in breeding attempts, breeding will be terminated and the female will be returned to routine activities. If breeding is observed, date of parturition can then be estimated.

In several tourist elephant camps, mahouts and owners often feel that breeding their elephants will make their job harder by spending the working or earning time in mating, pregnancy and parturition rest, as well as caring for the new born calf. Unlike the most productive elephant facilities in Myanmar and Sri Lanka, where the captive elephants belong to the Myanmar Timber Enterprise (MTE) and EOP (governmental organization), most elephants in India and Thailand are belonging to private owners; therefore, breeding elephants depend on the business and religious believes. However, at least 2 big elephant camps in Chiang Mai and Ayutthaya provinces set their own breeding programs, and dedicate some breeding bulls for mating without regular work, which are highly productive.

Sri Lanka

Breeding elephants in the Elephant Orphanage at Pinnawala village (EOP) is successful with the average of 2 calves per year during 1984-2007 from 24



female elephants. When a male is available in the herd, this male can be utilized to detect the females in heat. A male follows such a female and shows some reproductive behavior, such as the smelling of the genital area, the mouth and the urine of the female with the tip of its trunk. He also presses on the back of the female and even tries to mount it. Some cows in heat refuse feed offered in the evening. Also, when released from tethering to the grassland the next morning, they approach bulls and even try to move towards males in musth that are separately tethered.

When a female is in heat, the particular male will be determined to breed the estrous cow. However, more than one male is always allowed to mate with a female to ensure mating success. Selecting a suitable male for mating is also important in order to prevent inbreeding in successive generations.

At EOP, the average age at first calving was 14.5 years, and the calving interval varied from 2 to 12 years with a mean of 4.8 years. Although calving were recorded during all months in a year, 67% of calves were born during the five month period of June to October. This might be the stimulation of ovarian activity and mating about 22 months earlier, which coincides with the North-East monsoonal rains during October to December. The high rainfall results in abundant green vegetation, which could influence reproductive activities in both captive and wild elephants.

Western zoos

Western zoos concern more on the captive breeding program since importation of new animals from range countries has been increasingly difficult since mid-1980s, thus, animals born in captivity have become crucial to sustain the population. The major 2 problems with regard to breeding are well addressed 1) a failure of female conception rate or low number of calves produced per cow in her life time 2) the high calf mortality from still birth and maternal



infanticide. A great effort and expense has been implemented to breed a low but increasing numbers of elephants.

One of the plausible factors of low birth rate in zoos is that they are incapable to handle the males due to the aggression, particularly during musth period. Therefore, just a few breeding bulls are kept and breeding only occurs in the bull-containing zoos. Social ranking also caused the poor quality semen and suppressed the libido, which particular bulls can yield a number of calf born. Furthermore, for nulliparous females post 30 years old it is reported to have a higher incident rate of urogenital tract pathologies, and those after 35 years old or “post reproductive age” have a greater risk of dystocia and still birth. In addition, some aged cows exhibit irregular or non cycling. All of these factors have a high impact on fecundity rate and sustainable population of Asian elephants in western countries. Presently, artificial insemination (AI) is successful in breeding elephants with a promising result to increase the birth rate. This technique can help to minimize the bull-handling problems in zoos with less contact between both sexes, and also to sustain the population in a long term.